

MATERIALS TOWARD A MONOGRAPH OF THE GENUS VERBENA. XVIII

Harold N. Moldenke

As of the present writing (March 4, 1964) 36,954 herbarium specimens and 804 mounted photographs and other descriptive or illustrative material have been examined and annotated by me in the preparation of these preliminary monographic notes.

VERBENA (Dorst.) L.

Additional synonymy: Verbena Tourn. ex Westm. in L., Philos. Bot. 150. 1751. Uwarovia Bocq., Adansonia 2: 126. 1861--1862. Shuttleworthia Bocq., Adansonia 2: 126. 1861--1862. Verbena Endl. ex Bocq., Adansonia 3: 181. 1862. Verbena [Tourn.] L. apud Robinson & Fern. in A. Gray, New Man. Bot., ed. 7, 688. 1908.

Additional & emended bibliography: F. Hernandez, Rer. Medic. Nov. Hisp. 399. 1628; F. Hernandez, Nov. Pl. 399. 1651; Dodart., Mem. Acad. Sci. Paris 4: 317, pl. 317. 1669; Zanoni, Hist. Bot. 203--204, fig. 77. 1675; Barrelier, Plant. Gall. Hisp. 30, pl. 853 & 1146. 1714; Westm. in L., Orat. Tellur. Habit. Incr. 64. 1744; L., Hort. Upsal. 8--9. 1748; L., Philos. Bot. 63, 66, 87, 122, 150, & 174. 1751; Gesn. & Camer. in Gesh., Op. Bot. 1: 116. 1751; Kniphof, Bot. Orig. Herb. Viv. cent. 2, pl. [284]. 1757; Rüding, Comm. Bot. 462. 1766; J. A. Murr. in L., Syst. Veg., ed. 13, 61--62 & 844. 1774; L'Hér., Stirp. Nov. 1: 21--24, pl. 11 & 12. 1786; A. L. Juss., Gen. Pl., ed. 1, 109 (1789) and ed. 2, 122 & 123. 1791; L. C. Rich. in Michx., Fl. Bor.-Am., ed. 1, 2: 13--15 & 340. 1803; Dum. Cours., Bot. Cult., ed. 2, 2: 622--627. 1811; Pursh, Fl. Am. Sept. 2: 415--417, 711, & 725. 1814; Dum. Cours., Bot. Cult., ed. 2, 7: 131. 1814; L. C. Rich. in Michx., Fl. Bor.-Am., ed. 2, "1" [-2]: 13--15 & 340. 1820; Lehmann, Del. Sem. Hort. Hamb. 1826: 16. 1826; Hook., Bot. Misc. 1: 159--173, pl. 46--48. 1829; Lehmann, Del. Sem. Hort. Hamb. 1832: 7 (1832) and 1834: 7--8. 1834; Benth. in Hook., Journ. Bot. 1: 59. 1834; Steud., Nom. Bot., ed. 2, 1: 205, 234, 584, & 687 (1840) and 2: 54, 201, 397, 575, 629, 749--751, & 797. 1841; Engelm. & Gray, Pl. Lindheim. 1: 21. 1845; Benth., Pl. Hartw. 245. 1846; Regel, Gartenfl. 4: 373, pl. 142, fig. 1. 1855; Planch. & Van Houtte, Fl. des Serres 11 [ser. 2, 1]: pl. 1129. 1856; J. Torr. in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128. 1858; Munby, Cat. Pl. Alg. 25. 1859; Bocq., Adansonia 2: 86, 105--107, 111, 113, 115, 118, 123, 124, 126, 128, 130--133, 136, 139, 140, 142, 144, 146, 147, 149, 152--154, 157, & 158, pl. 11 (1861--1862) and 3: 180, 181, & 201--204. 1862; Bocq., Rev. Verbenac. 26, 27, 30, 31, 33, 35, 43, 44, 46--48, 50--53, 56, 59, 60, 62, 64, 66, 67, 69, 72, 73, 77, & 78. 1862; Bocq., Adansonia 2: 251. 1863; Griseb., Cat. Pl. Cub. 214. 1866; J. Ball, Journ. Linn. Soc. Lond. Bot. 16: 607. 1878; A. Gray, Syn. Fl. N. Am. 2 (1): 333 & 335--338. 1878; F. Phil., Cat. Pl. Vasc. Chil. 218--219. 1881; A. Gray, Proc. Am. Acad. Sci. 19: 95. 1883; Stapf,

Denkschr. Akad. Wiss. Wien 50: 34--35. 1885; Batt. & Trab., Fl. Alg. 1: 717. 1888; F. D. Bergen, Journ. Am. Folk-Lore 5: 102. 1892; Hitchc. & Norton, Kans. Agr. Exp. Sta. Bull. 50: 54, pl. 6, fig. 91 & 92. 1895; "Lo Spigolatore", Bull. Soc. Toscana Ortic. 22: 77, fig. 14. 1897; Selby, Bull. Ohio Agric. Sta. 83: 329--330. 1897; Solereder., Bull. Herb. Boiss., sér. 1, 6: 627 & 628. 1898; A. S. Hitchc., Fl. Kans. pl. 14 & 15. 1899; Wittmack, Gartenfl. 49: 585. 1900; K. Schum. in Just, Bot. Jahresber. 28 (1): 497. 1902; Ed. Rodigas, Bull. Arboricult. Belg. 1902: 113--114, fig. 4. 1902; Selby & Hicks, Bull. Ohio Agric. Sta. 142: 118, 121, & 123, pl. 4. 1903; Selby, Bull. Ohio Agric. Sta. 175: 350, pl. 4. 1906; J. W. Blankinship in Engelm. & Gray, Pl. Lindheim. 3: 186--187. 1907; L. H. Bailey, Botany 26 & 372, fig. 35. 1911; N. Taylor, Mem. N. Y. Bot. Gard. 5: [Fl. Vic. N. Y.] 525 & 526. 1915; Shreve, Carnegie Inst. Wash. Publ. 217: 19, 24, & 44. 1915; Gerth van Wijk, Dict. Plantnames 2: 228, 317, 478, 655, 893, 1492, & 1614. 1916; Rydb., Fl. Rocky Mts. 740. 1917; Druce, Rep. Bot. Exch. Club Brit. Isles 1918: 298. 1919; Urb. in Fedde, Repert. Beih. 5: 73. 1920; Tidestr., Contrib. U. S. Nat. Herb. 25: 469. 1925; Druce, Rep. Bot. Exch. Club Brit. Isles 1927: 452. 1928; Baeza, Nomb. Vulg. Pl. Silv. Chile, ed. 2, 49--50, 60--61, 65, 84, 100, 206, 212, 232, 233, & 269. 1930; Druce, Rep. Bot. Exch. Club Brit. Isles 1932: 348. 1933; Anon., Journ. Hort. Soc. Lond. 61: 401. 1935; H. S. Marshall, Kew Bull. 1936: 94. 1936; K. V. O. Dahlgren, Svensk. Bot. Tidskr. 32: 231. 1938; Moldenke, Saxiflora pl. 16. 1940; Offic. Org. Malayan Agri-Horticul. Assoc. Kuala Lumpur [MAHA Mag.] 10: 152. 1940; Cain, Found. Pl. Geogr. 335. 1944; C. N. Jones, Ohio Journ. Sci. 44: 190. 1944; Deam, Kriebel, Yuncker, & Friesner, Proc. Ind. Acad. Sci. 55: 56. 1946; Parodi, Rev. Argent. Agr. 14: 61--69. 1947; Martinez Crovetto & Piccinini, Revist. Investig. Agric. 4: 178, 180, 181, 225, & 226 (1950) and 4: 32, 33, & 77. 1951; Schnack & Covas, Revist. Argent. Agron. 18: 107--108, fig. 1. 1951; Datta, Caryologia 5: 359--370. 1952; Bally, Biol. Abstr. 30: 3351. 1956; Moldenke, Biol. Abstr. 30: 1092--1093 & 3551. 1956; Anon., Biol. Abstr. 30: 4360. 1958; Ahles & Radford, Journ. Elisha Mitchell Soc. 75: 144. 1959; Ratera, Not. Divulg. Inst. Munic. Bot. Carlos Thays 1: 43. 1961; Moldenke, Biol. Abstr. 38: 865 & 1535 (1962) and 39: 614 & 1942. 1962; Troncoso, Darwiniana 12: 527--531. 1962; Cuf., Bull. Jard. Bot. Brux. 32: Suppl. 787--788. 1962; Langman, Biol. Abstr. 42: 596. 1963; Moldenke, Biol. Abstr. 42: 1519 (1963) and 43: 643, 1278, B.110, B.114, & B.118. 1963; Soukup, Biota 4: 260, 279, & 302. 1963; Frei & Fairbrothers, Bull. Torret Bot. Club 90: 352. 1963; H. P. Riley, Fam. Flow. Pl. S. Afr. 128. 1963; J. D. Poindexter, Biol. Abstr. 43: 397. 1963; Van Steenis, Fl. Males. Bull. 18: 1069. 1963; Moldenke, Résumé Suppl. 7: 1--3 & 5--10 (1963) and 8: 1--6. 1964; Pearce Seeds & Plants, 1964 Gard. Aristocrats 20. 1964; R. A. Ludwig, Ind. Sem. Canada Dept. Agr. 1964: 31. 1964; Moldenke, Phytologia 9: 500--505. 1964.

It should be noted here that the Blairia Houst., Kaempferia Houst., and Sherardia Vail., given by Linnaeus (1751) as syno-

nyms of Verbena, are actually synonyms of Priva Adans., Ghinia Schreb., and Stachytarpheta Vahl, respectively.

The accreditation of the name Verbena to "[Tourn.] L." actually starts much earlier than the date of the reference given in the synonymy (above) of this genus in these notes. In A. L. Juss., Gen. Pl., ed. 1, 109 (1789) the genus is accredited to "T L", the "T" being an abbreviation for Tournefort and the "L" for Linnaeus. However, since this placement of the initials is somewhat ambiguous, it is not by me regarded as the de facto beginning of the accreditation used by Robinson & Fernald. Jussieu's symbols could just as well be interpreted as "Tourn. & L." or "Tourn. in L." or "Tourn. ex L."

According to Steudel (1841) the genus Verbena was classified in the Corytophyta by Necker, the Labiateae Verbeneae by Reichenbach, the Personatae by Linnaeus, the Ringentes Gymnospermae by Royen, the Ringentes Pediculares by Rüding, the Vitices by Jussieu, and, finally, in the Verbenaceae by Robert Brown. Rüding (1766) says of it: "Ringentes & Verticillates conjungit".

Soukup (1963) records "huallkjapaya" and "maycha" as vernacular names for members of the genus in Peru. The "verbena de tres esquinas" of Chile is Baccharis sagittalis P. DC. in the Carduaceae.

It is perhaps worth noting here that the reference Hook., Bot. Misc. 1: 159—173 (1829), given in the bibliography of the genus, is sometimes cited as "1830" in error; the page "66" reference in L., Syst. Veg., ed. 13 (1774) sometimes cited by authors is also erroneous.

Addenda to the list of excluded species:

Verbena capensis L. = Lippia javanica (Burm. f.) Spreng.

Verbena indica, myuros Barrel. = Elytraria imbricata (Vahl) Pers.,
Acanthaceae

Verbena odorata Pers. = Lippia alba (Mill.) N. E. Br.

VERBENA ABRAMSI Moldenke

Additional & emended bibliography: Moldenke, Biol. Abstr. 38: 865 (1962), 39: 1942 (1962), 42: 1519 (1963), and 43: 1278. 1963; Moldenke, Phytologia 9: 191. 1963.

XVERBENA ADULTERINA Hausskn.

Additional & emended bibliography: Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Phytologia 8: 120 & 145—146 (1961), 8: 378—379 (1962), and 9: 38. 1963.

VERBENA ALATA Sweet

Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 2: 749. 1841; D. Dietr., Syn. Pl. 3: 602. 1843; Moldenke, Phytologia 8: 149 (1961) and 9: 113, 114, 191, & 295. 1963; Moldenke, Résumé Suppl. 7: 5. 1963.

VERBENA AMBROSIFOLIA Rydb.

Additional & emended bibliography: Rydb., Fl. Rocky Mts. 740. 1917; Moldenke, Phytologia 8: 123 (1961), 8: 181, 182, 212, 213, 231, 279, 401, 404, 407, & 435—437 (1962), and 9: 15—17, 24, 27, 28, 61, 63, 87, 117, 134, 135, 143, 191, & 215. 1963.

The Ehlers & Ehlers 6361 distributed as V. ambrosifolia is actually V. tenuisecta Briq.; Baker, Earle, & Tracy 531, F. Clark 460, M. K. Clemens s.n. [El Paso, Oct. 24, 1916], Collector undesignated L.1-3, Cory 31173, Heller & Heller 3536, G. J. Ikenberry 389, C. L. Lundell 5590, E. G. Marsh 707, E. J. Palmer 32195, Parks & Cory 9148, Sturgis s.n. [May 4, 1902], Tharp 51-22, Waterfall 15782, and Wooton s.n. [Devil's Park, Aug. 9, 1900] are all V. wrightii A. Gray; C. C. Ellis 17 appears to be a mixture with V. wrightii (the United States National Herbarium specimen is definitely that species!); and C. Wright 1503 is a mixture of V. tumidula Perry and V. bipinnatifida var. latilobata Perry. Wooton 364 in most herbaria is V. wrightii, but in the Britton and the United States National herbaria it is definitely V. ambrosifolia.

McBreen found V. ambrosifolia on the tops of mesas, in a pine-pinyon-juniper association at the foot of mesas, and in similar habitats.

Additional citations: NEW MEXICO: Lincoln Co.: A. R. Moldenke 638 (B). Otero Co.: A. R. Moldenke 640 (B). San Miguel Co.: McBreen s.n. [June 15, 1963] (B), s.n. [near Rowe, October 1, 1963] (Z), s.n. [near Rowe, October 15, 1963] (Z). Santa Fe Co.: McBreen s.n. [June 22, 1963] (B). MEXICO: Coahuila: Wynd & Mueller 572 (Fs).

VERBENA AMBROSIFOLIA f. EGLANDULOSA Perry

Additional & emended bibliography: Moldenke, Phytologia 8: 120, 124, & 152 (1961), 8: 177, 397, 407, 436, & 437 (1962), and 9: 16, 17, 24, 27, 117, 135, & 191. 1963.

Additional citations: NEW MEXICO: Luna Co.: A. R. Moldenke 630 (B, Fg.).

VERBENA AMOENA Paxt.

Additional bibliography: Moldenke, Phytologia 8: 183—186, 400, & 427 (1962) and 9: 315 & 329. 1963.

VERBENA ANDALGALENSIS Moldenke

Additional & emended bibliography: Moldenke, Biol. Abstr. 30: 3551. 1956; Moldenke, Phytologia 8: 186 & 400 (1962) and 9: 72. 1963.

VERBENA ANDRIEUXII Schau.

Additional & emended bibliography: Moldenke, Phytologia 8: 186—187 & 400 (1962), 8: 461 (1963), and 9: 16. 1963.

VERBENA ARAUCANA R. A. Phil.

Additional bibliography: F. Phil., Cat. Pl. Vasc. Chil. 219. 1881; Moldenke, Phytologia 9: 191. 1963.

xVERBENA ARGENTINA Moldenke

Additional & emended bibliography: Moldenke, Phytologia 8: 120 (1961) and 8: 379 & 419. 1962.

VERBENA ARISTIGERA S. Moore

Additional bibliography: Moldenke, Phytologia 9: 122, 192, 394, & 397. 1963.

The A. Robert 849 distributed as "TYPE SPECIMEN" of this species is not the type collection at all, nor does it even represent this species — it is V. tenuisecta Briq.

VERBENA ATACAMENSIS Reiche

Additional bibliography: Moldenke, Phytologia 9: 192 & 394. 1963.

VERBENA AURANTIACA Spec.

Additional bibliography: Moldenke, Phytologia 8: 187, 192—193, 379—380, & 400. 1962.

xVERBENA BAILEYANA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961), 8: 380 & 400—401 (1962), and 9: 219—221. 1963.

VERBENA BALANSAE Briq.

Additional & emended bibliography: Moldenke, Phytologia 8: 380 & 401 (1962), 8: 461 (1963), and 9: 192. 1963.

The Dusén 8591 & 15177 distributed as this species are actually V. thymoides Cham.

VERBENA BANGIANA Moldenke

Additional & emended bibliography: Moldenke, Phytologia 8: 200 & 202 (1962) and 9: 51. 1963.

VERBENA BARBATA Grah.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 749. 1841; D. Dietr., Syn. Pl. 3: 605. 1843; Moldenke, Phytologia 8: 487 (1963) and 9: 60 & 192. 1963.

xVERBENA BEALEI Moldenke

Additional & emended bibliography: Moldenke, Phytologia 8: 120 (1961), 8: 200—202 & 401 (1962), and 9: 296. 1963.

VERBENA BERTERII (Meisn.) Schau.

Additional synonymy: Shuttleworthia berterii Meisn. ex Steud., Nom. Bot., ed. 2, 2: 575. 1841. Verbena berteri (Meisn.) Schau. ex Soukup, Biota 4: 279. 1963.

Additional & emended bibliography: Bocq., Adansonia 2: 126.

1861--1862; Bocq., Rev. Verbenac. 46. 1862; F. Phil., Cat. Pl. Vasc. Chil. 219. 1881; Moldenke, Phytologia 8: 417 & 420 (1962) and 9: 12, 14, 67, 70, 117, 192, 388, 393, 394, 397, 399, 401, & 403 (1963), and 9: 501. 1964; Moldenke, Résumé Suppl. 8: 5. 1964.

VERBENA BERTERII f. ALBIFLORA Moldenke

Additional synonymy: Verbena berteri f. albiflora Moldenke ex Soukup, Biota 4: 279. 1963.

Additional & emended bibliography: Moldenke, Phytologia 8: 381. 1962; Soukup, Biota 4: 279. 1963; Moldenke, Résumé Suppl. 8: 5. 1964.

xVERBENA BINGENENSIS Moldenke

Additional & emended bibliography: Moldenke, Phytologia 8: 120 (1961) and 8: 205--207 & 280. 1962.

VERBENA BIPINNATIFIDA Nutt.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 749. 1841; A. S. Hitchc., Fl. Kans. pl. 15. 1899; J. W. Blankinship in Engelm. & Gray, Pl. Lindheim. 3: 186. 1907; Moldenke, Phytologia 8: 121, 124, 149, 150, & 152 (1961) and 8: 177, 178, 182, 243, 279, 378, 397, 400, 435--437, & 440. 1962; Moldenke, Biol. Abstr. 38: 865 & 1535. 1962; J. D. Poindexter, Trans. Kans. Acad. Sci. 65: 409 & 419. 1962; Moldenke, Phytologia 9: 14--18, 24, 27, 61, 84, 87, 131, 133--136, 141, 143, 144, 165, 190, 192, 193, & 220. 1963; Moldenke, Résumé Suppl. 7: 2, 3, & 10. 1963.

The Aydell s.n. [Feb. 1932], H. J. Banker 3685 (in part), Cléonique-Joseph 4559, McAtee 3349, Miller & Maguire 1255, L. H. Pammel s.n. [Houston, 3-16-29], W. H. Rhoades s.n. [near Atal-tala, July 1918], s.n. [near Tipton, September 1935], s.n. [Lees-ville, 8-1936], & s.n. [near Attala], U. Singh 163, Tharp, Turner, & Johnston 54746a, E. Wall s.n. [Nelspruit, 25/10/38], Webster & Wilbur 3282, and B. Williams s.n. [Ruston, March 28, 1950], distributed as this species, are all V. tenuisecta Briq.; Hinton 1191; is V. teucriifolia Mart. & Gal.; and Baker, Earle, & Tracy 531, Collector undesignated L.1-3, G. L. Fisher 36105, 36132, & s.n. [July 20, 1936], Goodman & Waterfall 4811, E. L. Greene s.n. [26 July 1880], Heller & Heller 3536, Herb. Univ. Texas s.n. [Marathon, 6/4/31], M. E. Jones s.n. [Rincon, 5-16-1890], R. B. Livingston 3131, Loughridge 461, Mearns 108 & 109, A. Nelson 10358, E. J. Palmer 32195, F. G. Plummer s.n. [Lincoln National Forest, 1903], H. H. Rusby 337, E. D. Schulz s.n. [near Alpine, Aug. 4, 1928], Snow s.n. [Santa Fe, Aug. '80], Tharp 8840, Whitehouse 19537, Wooton s.n. [Divide above Mescalero Agency, June 23, 1895] and s.n. [White Sands, Aug. 25, 1899], C. L. York 48064, and Zobel s.n. [Deer Creek Canyon, May 25, 1934] are all V. wrightii A. Gray.

The W. H. Over 2103 (W--582936) cited in Phytologia 8: 402

(1962) from "Washington Co., South Dakota", is actually from Washington County, Nebraska. Likewise, the Demaree 12003 (W-1683782) cited in *Phytologia* 8: 234 & 403 from "Lamar Co., Oklahoma" is from Lamar County, Texas, in spite of the fact that the labels are plainly marked "Plants of Oklahoma".

Additional citations: TEXAS: Dallas Co.: Lundell & Lundell 11315 (B).

VERBENA BIPINNATIFIDA var. **LATILOBATA** Perry

Additional bibliography: Moldenke, *Phytologia* 8: 177, 212--214, 231, & 397 (1962) and 9: 16, 24, 135, & 193. 1963.

xVERBENA BLANCHARDI Moldenke

Additional bibliography: Moldenke, *Phytologia* 8: 120 (1961), 8: 465 (1963), and 9: 147, 193, 219, & 220. 1963.

VERBENA BONARIENSIS L.

Additional synonymy: Verbena quadrangularis Arrab. ex Steud., *Nom. Bot.*, ed. 2, 2: 750. 1841.

Additional & emended bibliography: Kniphof, *Bot. Orig. Herb. Viv. cent.* 2: pl. [284]. 1757; J. A. Murr. in L., *Syst. Veg.*, ed. 13, 62. 1774; L'Hér., *Stirp. Nov.* 1: 22. 1786; Dum. *Cours., Bot. Cult.*, ed. 2, 2: 623. 1811; Hook., *Bot. Misc.* 1: 159 & 166. 1829; Steud., *Nom. Bot.*, ed. 2, 2: 750 & 751. 1841; D. Dietr., *Syn. Pl.* 3: 600. 1843; F. Phil., *Cat. Pl. Vasc. Chil.* 219. 1881; Hicken, *Chloris Plat. Argent.* 195--196. 1910; N. Taylor, *Mem. N. Y. Bot. Gard.* 5: [Fl. Vic. N. Y.] 526. 1915; Ratera, *Not. Divulg. Inst. Munic. Bot. Carlos Thays* 1: 43. 1961; Moldenke, *Phytologia* 8: 120, 121, & 124 (1961), 8: 267, 280, 313, 314, 316--318, 384, & 435 (1962), 8: 464, 477, & 490 (1963), and 9: 44, 66, 67, 190, 194--197, 214, 215, 293, 295, 296, 361, 374--376, 379, 381, & 382. 1963; Moldenke, *Résumé Suppl.* 7: 1, 2, & 6. 1963; Soukup, *Biota* 4: 279. 1963; Moldenke, *Phytologia* 9: 502. 1964.

Emended illustration: Kniphof, *Bot. Orig. Herb. Viv. cent.* 2: pl. [284] (in color). 1757.

Ratera (1961) records the common names "verbena" and "yerba de los hechiceros" and comments that "Se utilizan las hojas y ramitas jóvenes, generalmente para ciertas afecciones hepáticas y gastricas".

It should be noted here that the Kniphof, *Bot. Orig. Herb. Viv.* reference given above in the bibliography of this species is sometimes erroneously cited as "11" and the Hook., *Bot. Misc.* 1: 159 & 166 (1829) reference is often misdated "1830". The A. R. Moldenke 452 (Fg) cited in *Phytologia* 8: 406 (1962) from "Columbus Co., South Carolina" is actually from Columbia County, North Carolina.

Additional citations: TANGANYIKA: Drummond & Hemsley 2092 (B).

VERBENA BONARIENSIS var. **CONGLOMERATA** Briq.

Additional & emended bibliography: Moldenke, *Phytologia* 8: 256, 382, 383, & 407 (1962), 8: 463 (1963), and 9: 375 & 382. 1963.

VERBENA BRACTEATA Lag. & Rodr.

Additional & emended synonymy: Verbena bracteata Cav. ex Steud., Nom. Bot., ed. 2, 2: 750. 1841. Zapania bracteosa Poir. ex Steud., Nom. Bot., ed. 2, 2: 750, in syn. 1841. Zappania bracteosa Poir. ex Steud., Nom. Bot., ed. 2, 2: 797. 1841.

Additional & emended bibliography: L'Hér., Stirp. Nov. 1: 22. 1786; Michx., Fl. Bor.-Am., ed. 1, 2: 13. 1803; Pursh, Fl. Am. Sept. 2: 416. 1814; Michx., Fl. Bor.-Am., ed. 2, "1" [=2]: 13. 1820; Lehmann, Del. Sem. Hort. Hamb. 1826: 16. 1826; Hook., Comp. Bot. Mag. 1: 176. 1836; Steud., Nom. Bot., ed. 2, 2: 750 & 797. 1841; D. Dietr., Syn. Pl. 3: 604. 1843; J. Torr. in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128. 1858; F. Phil., Cat. Pl. Vasc. Chil. 219. 1881; Hitchc. & Norton, Kans. Agr. Exp. Sta. Bull. 50: 54, pl. 6, fig. 92. 1895; Selby, Bull. Ohio Agric. Sta. 83: 329. 1897; A. S. Hitchc., Fl. Kans. pl. 15. 1899; K. Schum. in Just, Bot. Jahresser. 28 (1): 497. 1902; Selby, Bull. Ohio Agric. Sta. 175: 350. 1906; N. Taylor, Mem. N. Y. Bot. Gard. 5: [Fl. Vic. N. Y.] 526. 1915; Tidestr., Contrib. U. S. Nat. Herb. 25: 469. 1925; Moldenke, Phytologia 8: 120 & 121 (1961), 8: 177, 206, 212, 213, 257, 268, 316, 397-399, 401, 428, 435, 437, & 439 (1962), 8: 462, 469, 471, 472, & 477 (1963), and 9: 16, 24, 27, 53, 54, 144, 156, 195, 215, 219, 220, 358, & 404. 1963; Moldenke, Biol. Abstr. 38: 1535 (1962) and 39: 614. 1962; J. D. Poindexter, Trans. Kans. Acad. Sci. 65: 418. 1962; Moldenke, Résumé Suppl. 7: 1-3 & 9. 1963.

It is of interest to note that Steudel (1841) maintains V. bracteata Cav. and V. bracteosa Michx. as two separate species, placing V. repens Spreng. and V. squarrosa Roth in the synonymy of the former and Zapania bracteosa Poir. and Zappania bracteosa Poir. in the synonymy of the latter.

The Over 2389 (W-582964) cited in Phytologia 8: 408 (1962) from "Washington Co., South Dakota" is actually from Washington County, Nebraska, and the A. R. Moldenke 118 (Fg) cited on page 410 of the same volume from "Grady" County, Texas, is from Gray County in that state.

Hooker (1836) cites T. Drummond 253 ter in the Kew herbarium.

Additional citations: COLORADO: Boulder Co.: Ewan, Plant. Exsicc. Gray. 1090 (B, B).

VERBENA BRACTEATA f. ALBIFLORA (Cockerell) Moldenke

Additional & emended bibliography: Moldenke, Phytologia 8: 309. 1962; Moldenke, Biol. Abstr. 39: 614. 1962.

VERBENA BRASILIENSIS Vell.

Additional synonymy: Verbena brasiliensis Arrab. ex Steud., Nom. Bot., ed. 2, 2: 750. 1841.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; Moldenke, Phytologia 8: 124 & 148 (1961) and 8: 256, 257, & 405. 1962; Moldenke, Biol. Abstr. 39: 614 & 1942. 1962; Mol-

Moldenke, Phytologia 8: 463 (1963) and 9: 66, 151, 194--197, 296, & 382. 1963; Moldenke, Biol. Abstr. 42: 1519. 1963; Moldenke, Résumé Suppl. 7: 1--3. 1963.

The A. R. Moldenke 457 (Fg) cited in Phytologia 8: 413 (1962) from "Columbus Co., South Carolina" is actually from Columbus County, North Carolina.

VERBENA CABRERAE Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961), 8: 189 & 419 (1962), and 9: 70. 1963.

The species has been found by Meyer & Sleumer at 180 meters altitude, blooming in December.

Additional citations: ARGENTINA: Santiago del Estero: Meyer & Sleumer s.n. [T. Meyer 15257] (B).

VERBENA CALLIANTHA Briq.

Additional bibliography: Moldenke, Phytologia 8: 120 (1960), 8: 189, 202, & 416 (1962), and 9: 10, 12, 14, 67, 70, 72, 197, 388, & 393. 1963.

The Herb. Osten 7900 and T. Rojas 382 & 1382, distributed as this species, are actually V. tomophylla Briq.

VERBENA CAMERONENSIS L. I. Davis

Additional bibliography: Moldenke, Phytologia 8: 124 & 436 (1961) and 9: 62, 63, 84, & 197. 1963; Moldenke, Résumé Suppl. 7: 3. 1963.

The specimen of Galeotti 777 photographed by Macbride as his photograph no. 24699 is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva.

VERBENA CAMPESTRIS Moldenke

Additional bibliography: Moldenke, Phytologia 8: 425--426 (1962) and 8: 465. 1963.

Additional citations: BRAZIL: Santa Catarina: J. F. T. Müller s.n. (P).

VERBENA CANADENSIS (L.) Britton

Additional & emended synonymy: Verbena aubletia Juss. ex Hook., Comp. Bot. Mag. 1: 176. 1836. Billarderia explanata Moench apud Steud., Nom. Bot., ed. 2, 1: 205, in syn. 1840. Verbena aubletia L. apud Steud., Nom. Bot., ed. 2, 2: 749. 1841.

Additional & emended bibliography: L'Hér., Stirp. Nov. 1: 22. 1786; Michx., Fl. Bor.-Am., ed. 1, 2: 13. 1803; Dum. Cours., Bot. Cult., ed. 2, 2: 623--624. 1811; Pursh, Fl. Am. Sept. 2: 415--416. 1814; Michx., Fl. Bor.-Am., ed. 2, "1" [-2]: 13. 1820; Hook., Bot. Misc. 1: 169. 1829; Lehm., Del. Sem. Hort. Hamb. 1832: 7. 1832; Hook., Comp. Bot. Mag. 1: 176. 1836; Steud., Nom. Bot., ed. 2, 1: 205, 234, & 687 (1840) and 2: 201, 749, & 750. 1841; D. Dietr., Syn. Pl. 3: 694. 1843; J. Torr. in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128. 1858; Bocq., Adansonia 2: 126. 1861--1862; Bocq., Rev. Verbenac. 46. 1862; A. Gray, Syn. Fl. N.

Am. 2 (1): 337. 1878; A. S. Hitchc., Fl. Kans. pl. 15. 1899; Ed. Rodigas, Bull. Arboricult. Belg. 1902: 113 & 114. 1902; L. H. Bailey, Botany 372. 1911; Fernald, Rhodora 38: 443. 1936; K. V. O. Dahlgren, Svensk. Bot. Tidskr. 32: 231. 1938; Cain, Found. Pl. Geogr. 335. 1944; Moldenke, Phytologia 8: 120, 121, 123, 124, & 151 (1961) and 8: 177, 182, 183, 187, 204, 210, 212--214, 231, 243, 279, 280, 401, 407, & 423. 1962; J. D. Poindexter, Trans. Kans. Acad. Sci. 65: 409 & 419. 1962; Moldenke, Phytologia 8: 462 & 477 (1963) and 9: 10, 16, 24, 27, 61, 62, 82--85, 87, 115--118, 135, 136, 143, 144, 193, 197--198, 308--315, 352, 376, 382, 394, 397, 400, & 404. 1963; Moldenke, Biol. Abstr. 42: 1519. 1963; Pearce, Seeds & Pl. 10. 1963; G. N. Jones, Fl. Ill., ed. 3, [Am. Midl. Nat. Monog. 7:] 213. 1963; Moldenke, Résumé Suppl. 7: 9 (1963) and 8: 5. 1964.

The Hook., Bot. Misc. 1: 169 (1829) reference given above is often erroneously cited as "1830", while J. Torr. in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128 is often referred to as "Torr. Bot. Mex. Bound. 128".

Fernald (1936) cites Fernald & Griscom 4496 from Princess Anne County, Virginia, and notes that "In Dr. Perry's Revision... recorded northward only to North Carolina but Small (Man.) extends the range to Virginia." Hooker (1836) cites T. Drummond s. n. [Jacksonville], s.n. [St. Louis], and s.n. [New Orleans, 1833] deposited in the Kew herbarium.

The A. D. Brubaker 22, Diener 835, S. F. Evans E.4270, Girvin s.n. [Indian Res., March 15, 1940], Grossman 7, Parks & Cory 22131, Rose-Innes & Warnock 21818, and Tharp 253 & s.n. [7/23/39], distributed as V. canadensis, are all V. tenuisecta Briq.; H. H. Bartlett 10030, Collector undesignated s.n. [Plains near Leon Spring, Sept. 7, 1852], and C. Wright 455 are V. tumidula Perry; C. Wright 1503 is a mixture of V. tumidula and V. bipinnatifida var. latilobata Perry; and Goodman & Waterfall 4811, G. J. Ikenberry 256, O. B. Metcalfe 1090, Mulford 37 & s.n. [near Albuquerque, Sept. '95], Parry, Bigelow, Wright, & Schott s.n. [Frontera, Mar. 22, 1852], Rehm & Viereck s.n. [April 16, 1902], and W. W. Robbins 8242 are all V. wrightii A. Gray.

VERBENA CANADENSIS f. CANDIDISSIMA (Haage & Schmidt) Palmer & Steyermark.

Additional bibliography: Moldenke, Phytologia 8: 437 (1962) and 8: 468--469. 1963.

VERBENA CANESCENS H.B.K.

Additional synonymy: Verbena canescens Humb. & Bonpl. ex Lehm., Del. Sem. Hort. Hamb. 1826: 16. 1826. Verbena canescens Humb. & Kunth ex D. Dietr., Syn. Pl. 3: 604. 1843. Verbena neei Moldenke, Phytologia 2: 241. 1947.

Additional & emended bibliography: Lehm., Del. Sem. Hort. Hamb. 1826: 16. 1826; Hook., Bot. Misc. 1: 168. 1829; Lehm., Del.

Sem. Hort. Hamb. 1832: 7. 1832; Steud., Nom. Bot., ed. 2, 2: 201 & 750. 1841; D. Dietr., Syn. Pl. 3: 604. 1843; J. Torr. in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128. 1858; A. Gray, Syn. Fl. N. Am. 2 (1): 336—337. 1878; J. W. Blankinship in Engelm. & Gray, Pl. Lindheim. 3: 187. 1907; Parodi, Rev. Argent. Agr. 14: 61—69. 1947; Moldenke, Phytologia 2: 241, 331, & 339. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 44 & 73. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 19, 23, 32, 106, 197, & 198. 1949; Moldenke, Alph. List Cit. 3: 753, 767, 771, 772, 784, 787, 799, 802, 807, 829, 844, 850, 898, 934, & 963. 1949; E. J. Salisb., Ind. Kew. Suppl. 11: 263. 1953; Moldenke, Résumé 24, 28, 39, 127, 360, 361, 365, 373, 471, & 472. 1959; Moldenke, Phytologia 8: 141 (1961) and 8: 243, 268, & 279. 1962; Troncoso, Darwiniana 12: 529—530. 1962; Langman, Biol. Abstr. 42: 596. 1963; Moldenke, Phytologia 8: 477 (1963) and 9: 17, 87, 155, 156, 165, 198, 215, & 379. 1963; Moldenke, Résumé Suppl. 7: 3 (1963) and 8: 2, 5, & 6. 1964.

It should be noted here that the reference Hook., Bot. Misc. 1: 168 (1829), cited above, is often incorrectly cited as "1830"; and J. Torr. in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128 (1858) is often cited as "Torr. Bot. Mex. Bound. 128".

Troncoso (1962) says "El tipo de Verbena Neei Mold....se encuentra en el Herbario del Instituto Botánico A. J. Cavanilles de Madrid (MA) y lleva un rótulo que dice: 'Pampas de Buenos Aires, Née, Iter 108, Exped. Malaspina.' Examinado dicho tipo, pude comprobar que no es una planta argentina y que el origen indicado en la etiqueta es erróneo, como en tantos otros ejemplares de Née que sufrieron confusión de rótulos (ver Parodi, L. R., Rev. Arg. de Agr. 14: 61—69. 1947). Se trata, en verdad, de Verbena canescens H.B.K., originaria de México, como lo he podido verificar por la descripción y lámina originales. También coincide muy bien con los siguientes ejemplares de herbario del Darwinion: MEXICO: Oaxaca, Pringle 4784, VIII-1894 (Si). COLOMBIA: San Cristobal, Fr. Apollinaire, II-1908 (Si.3343). Verbena Neei desaparece, pues, del catálogo de la flora argentina y pasa a la sinonimia de V. canescens H.B.K." This, by the way, is the first record of the species from Colombia.

The N. C. Henderson 63-96 and E. G. Marsh 494, distributed as V. canescens, are actually var. roemeriana (Scheele) Perry; L. F. Ward s.n. [Hearne, Sept. 11, 1877] is in part V. halei Small and in part V. xutha Lehmann; Smith, Peterson, & Tejeda 3907 is V. menthaefolia Benth., 3940 is the type collection of V. canescens f. albiflora Moldenke, and 3957 is V. neomexicana (A. Gray) Small.

Crutchfield & Johnston describe V. canescens as "infrequent perennials in short brush on shale hills".

Additional citations: MEXICO: Tamaulipas: Crutchfield & Johnston 5807a (Au-187642). State undetermined: Née 108 (F-photo, F-photo, N, N-photo, Q, Z--photo).

VERBENA CANESCENS f. *ALBIFLORA* Moldenke, *Phytologia* 9: 500—501. 1964.

Bibliography: Moldenke, *Phytologia* 9: 500—501. 1964.

This form differs from the typical form of the species in having white corollas.

The type of the form was collected by C. E. Smith, Jr., F. A. Peterson, and Narciso Tejeda (no. 3940) in gray to whitish soils with thorn-scrub-cactus cover, among occasional calcareous outcrops along the Tehuacán-Orizaba highway just above Azumbilla, at 1500—1800 meters altitude, Puebla, Mexico, on July 18, 1961, and is deposited in the United States National Herbarium at Washington. The form is known thus far only from the type specimen.

Citations: MEXICO: Puebla: Smith, Peterson, & Tejeda 3940 (W—2397959—type).

VERBENA CANESCENS var. *ROEMERIANA* (Scheele) Perry

Additional bibliography: Moldenke, *Phytologia* 8: 124 (1961), 8: 464 & 471 (1963), and 9: 36, 165, & 198. 1963; Moldenke, Résumé Suppl. 7: 3 (1963) and 8: 1. 1964.

Additional citations: TEXAS: Shackelford Co.: N. C. Henderson 63—96 (Au—217646). MEXICO: Coahuila: E. G. Marsh 494 (Au—212482).

VERBENA CAROLINA L.

Additional & emended synonymy: *Verbena biserrata* Humb. & Bonpl. apud Steud., Nom. Bot., ed. 2, 2: 749. 1841. *Verbena polystachya* Humb. & Bonpl. apud Steud., Nom. Bot., ed. 2, 2: 750. 1841. *Verbena veronicaefolia* Humb. & Bonpl. apud Steud., Nom. Bot., ed. 2, 2: 751. 1841. *Verbena veronicaefolia* Humb. & Kunth apud D. Dietr., Syn. Pl. 3: 601. 1843.

Additional & emended bibliography: J. A. Murr. in L., *Syst. Veg.*, ed. 13, 62. 1774; L'Hér., *Stirp. Nov.* 1: 22. 1786; Dum. Cours., Bot. Cult., ed. 2, 2: 623. 1811; Hook., *Comp. Bot. Mag.* 1: 176. 1836; Steud., Nom. Bot., ed. 2, 2: 749—751. 1841; D. Dietr., *Syn. Pl.* 3: 601. 1843; N. J. Anderss., *Galap. Veg.* 199—200. 1854; N. J. Anderss., *Vet. Akad. Handl. Stockh.* 1853: 199—200. 1855; A. Gray, *Syn. Fl. N. Am.* 2 (1): 335. 1878; S. Wats., *Proc. Am. Acad. Sci.* 18: 135. 1883; H. H. Rusby, *Mem. Torrey Bot. Club* 6: 106. 1896; Moldenke, *Phytologia* 8: 121, 124, & 143. (1961), 8: 257, 317, & 417 (1962), 8: 496 (1963), and 9: 52, 81, 93, 126, 151, 165, 198—199, 214, 215, & 219. 1963; Moldenke, Résumé Suppl. 8: 6. 1964.

Steudel (1841) notes that according to Sprengel *V. polystachya* is a synonym of *V. urticifolia* L. This, however, is not true, although the two species are certainly closely related. Watson (1883) was of the opinion that Palmer 2037 is "probably a hybrid between *V. polystachya* or *V. urticaefolia* and *V. xutha*", but I regard it as typical *V. ehrenbergiana* Schau.

The Smith, Peterson, & Tejeda 3701 distributed as *V. carolina* is actually f. *albiflora* Moldenke; *Herb. Molliano s.n.* [P.], O. Sanders 5, and *S. M. Tracy 8037* are *V. urticifolia* L.; *W. C. Co-*

ker s.n. [July 8, 1909] is V. urticifolia var. leiocarpa Perry & Fernald; Herb. Hort. Bot. Genev. s.n. [18 Aug. 1826] is in part V. urticifolia var. leiocarpa and in part V. recta H.B.K.; and T. L. Andrews s.n. [Ascension, 13-1] and I. L. Forbes s.n. [Colfax, Aug. 20, 1927] are V. xutha Lehmann.

Hooker (1836) cites T. Drummond 253 from New Orleans, Louisiana, presumably deposited in the Kew herbarium.

Additional citations: ARIZONA: Cochise Co.: A. R. Moldenke 781 (B, Fg).

VERBENA CAROLINA f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 7: 420 (1961), 8: 487 & 491 (1963), and 9: 199. 1963.

Smith, Peterson, & Tejeda found this form growing in gravelly gray or brown soil at the edge of a field in thorn-scrub-cactus to mesic semi-evergreen forest formation, 100 to 1800 meters altitude.

Additional citations: MEXICO: Puebla: Smith, Peterson, & Tejeda 3701 (W-2397743).

VERBENA CATHARINAE Moldenke

Additional bibliography: Moldenke, Phytologia 8: 496 (1963) and 9: 8. 1963; Moldenke, Biol. Abstr. 43: 1278. 1963.

VERBENA CHACENSIS Moldenke

Additional bibliography: Moldenke, Biol. Abstr. 30: 3551. 1956; Moldenke, Phytologia 9: 8—9. 1963.

VERBENA CHEITMANIANA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 419 (1962) and 9: 199. 1963.

VERBENA CHILENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 9: 122, 125, 126, & 199. 1963.

VERBENA CILIATA Benth.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 605. 1843; A. Gray, Syn. Fl. N. Am. 2 (1): 337. 1878; J. W. Blankinship in Engelm. & Gray, Pl. Lindheimer. 3: 187. 1907; Shreve, Carnegie Inst. Wash. Publ. 217: 19 & 44. 1915; Moldenke, Phytologia 8: 124 & 152 (1961), 8: 177, 182, 202, 212, 213, 215, 231, 243, 279, 397, 399, 400, 417, 420, 423, 424, 435, & 436 (1962), 8: 473 & 487 (1963), and 9: 24—28, 61, 65, 67, 70, 84, 87, 134—137, 141, 144, 156, 199—200, 388, 393, & 397. 1963; Moldenke, Résumé Suppl. 7: 3 & 9. 1963.

Smith, Peterson, & Tejeda describe the corollas of this plant as magenta and found the plant in black to gray soils, common on roadsides and in pastures, in a formation of oak forest above giving way to scrubby secondgrowth thickets below. Sonderstrom describes it as having corollas "pink, turning blue with age".

Shreve (1915) calls the species an ephemeral summer-active herbaeous plant.

The H. H. Rusby 124 distributed as *V. ciliata* is actually *V. teucrifo^{li}lia* Mart. & Gal.; Schery 142 is in part *V. menthaefolia* Benth. and in part *V. teucrifo^{li}lia*; Pringle 3551 is *V. teucrifo^{li}lia* var. *corollulata* Perry; Parry & Palmer 719 is in part *V. ciliata* and in part *V. teucrifo^{li}lia* var. *corollulata*; E. J. Palmer 13512 is the type collection of *V. tumidula* Perry; and Eastwood 15697, Ferril s.n. [May 11, 1906], Griffiths 5190, Herb. State Agric. Coll. 4184, Nelson & Nelson 4983 & 5017, & J. Skehan 5 are *V. wrightii* A. Gray.

Additional citations: MEXICO: Chihuahua: Sonderstrom 847 (W-2396145). Puebla: Smith, Peterson, & Tejeda 3921 (W-2397939).

VERBENA CILIATA var. *LONGIDENTATA* Perry

Additional bibliography: Moldenke, Phytologia 8: 182, 212--214, 436, & 437 (1962) and 9: 16, 19, 22--27, 61, 64, 135, 193, 199, & 200. 1963.

The Waterfall 3922 distributed as this variety is actually *V. wrightii* A. Gray.

VERBENA CILIATA var. *PUBERA* (Greene) Perry

Additional bibliography: Moldenke, Phytologia 8: 212, 215, 397, 399, & 437 (1962) and 9: 16, 24, 26--29, 135, 136, & 200. 1963.

The Eastwood 15697, Mearns 109, Parks & Cory 18358, Sperry T. 126 & T. 573, Thurber 143, and S. E. Wolff 1666 distributed as this variety are actually *V. wrightii* A. Gray.

VERBENA CLAVATA Ruiz & Pav.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 604. 1843; Bocq., Adansonia 2: 126. 1861--1862; Bocq., Rev. Verbenac. 46. 1862; Moldenke, Phytologia 9: 29--33, 117, & 200 (1963) and 9: 501. 1964.

VERBENA CLAVATA var. *CASMENSIS* Moldenke

Additional bibliography: Moldenke, Phytologia 9: 31--33 & 200. 1963.

x^x*VERBENA CLEMENSORUM* Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961) and 9: 33--34. 1963.

VERBENA CLOVERAE Moldenke

Additional bibliography: Moldenke, Phytologia 8: 124 (1961), 8: 477 (1963), and 9: 34--37, 64, 198, 200, & 201. 1963; Moldenke, Résumé Suppl. 7: 3 & 9. 1963.

VERBENA COCCINEA Raf.

Additional bibliography: Moldenke, Phytologia 9: 201. 1963; Mol-

denke, Résumé Suppl. 7: 3. 1963.

VERBENA COCHABAMBENSIS Moldenke

Additional bibliography: Moldenke, Phytologia 9: 37-38, 201, & 394. 1963; Moldenke, Résumé Suppl. 7: 9. 1963.

xVERBENA CONATA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 & 145 (1961) and 9: 38-39 & 166. 1963.

xVERBENA CORRUPTA Moldenke

Additional bibliography: Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Phytologia 8: 120 (1961) and 9: 40. 1963.

VERBENA CORYMBOSA Ruiz & Pav.

Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 602. 1843; F. Phil., Cat. Pl. Vasc. Chil. 220. 1881; Baeza, Nomb. Vulg. Pl. Silv. Chile, ed. 2, 60-61, 233, & 269. 1930; Moldenke, Phytologia 8: 247, 257, 280, & 316 (1962), 8: 463 (1963), and 9: 40-45, 201, & 296. 1963.

xVERBENA COVASII Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961) and 9: 45-46 & 201. 1963.

VERBENA CRITHMIFOLIA Gill. & Hook.

Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 603. 1843; H. S. Marshall, Kew Bull. 1936: 94. 1936; Moldenke, Phytologia 8: 123 (1961) and 9: 46-49, 120, 201-202, & 299-302. 1963.

According to the original collectors, the flowers of this plant "yield a honey-like smell". They describe their V. minor as foliis angustioribus". I regard this variety as V. hookeriana (Covas & Schnack) Moldenke, which see.

Additional citations: ARGENTINA: Mendoza: Sleumer 328 (B).

VERBENA CUNEIFOLIA Ruiz & Pav.

Additional synonymy: Verbena cuneifolia Pers. ex Steud., Nom. Bot., ed. 2, 2: 750, in syn. 1841.

Additional & emended bibliography: Hook., Bot. Misc. 1: 170. 1829; Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 603 & 604. 1843; F. Phil., Cat. Pl. Vasc. Chil. 220. 1881; Moldenke, Phytologia 9: 50-52, 202, 286, 293, & 296. 1963.

It is worth noting here that the reference Hook., Bot. Misc. 1: 170 (1829) is often erroneously cited as "1830".

The F. L. Stevens 7 distributed as this species is actually V. villifolia Hayek.

VERBENA CURTISII Moldenke

Additional bibliography: Moldenke, Phytologia 8: 488 (1963) and 9: 52-53. 1963.

xVERBENA DEAMII Moldenke

Additional & emended bibliography: Moldenke, Phytologia 8: 120 (1961), 8: 268, 272, & 280 (1962), and 9: 53—54, 59, & 202. 1963; Moldenke, Biol. Abstr. 43: 643. 1963.

VERBENA DELICATULA Mart.

Additional bibliography: Moldenke, Phytologia 8: 201 (1962) and 9: 59—60. 1963.

VERBENA DELTICOLA Small

Additional & emended bibliography: Moldenke, Phytologia 8: 124 (1961), 8: 397, 423—425, 435, 436, & 439 (1962), 8: 460, 461, & 465 (1963), and 9: 16, 36, 60—64, 84, 87, 135, 144, & 202. 1963; Moldenke, Résumé Suppl. 7: 3. 1963;

The Collector undesignated s.n. [Plains near Leon Spring, Sept. 7, 1852], distributed as this species with a question, is actually V. tumidula Perry.

xVERBENA DERMENI Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961), 8: 463 (1963), and 9: 66—67 & 296. 1963.

VERBENA DISSECTA Willd.

Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 605. 1843; F. Phil., Cat. Pl. Vasc. Chil. 220. 1881; Moldenke, Phytologia 8: 121 & 123 (1961), 8: 190, 202, 400, 401, 417, 419, & 420 (1962), 8: 461 (1963), and 9: 12, 14, 67—75, 128, 202—203, 388, 393—397, & 399—401. 1963.

The G. L. Fisher 200, R. M. Harper 25, N. Y. Bot. Gard. Cult. Pl. 22428, O'Neill 551 & s.n. [River Junction, April 9, 1925], Parodi 12233, R. C. Schneider s.n. [N. Y. Bot. Gard. Cult. Pl. 22428], Troncoso 291, and Valeur 448, distributed as this species, are all V. tenuisecta Briq.

xVERBENA DISSOLUTA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961) and 9: 75—76. 1963.

VERBENA DUSENII Moldenke

Additional bibliography: Moldenke, Phytologia 9: 79—80, 120, & 203. 1963.

VERBENA EHRENBURGIANA Schau.

Additional bibliography: S. Wats., Proc. Am. Acad. Sci. 18: 135. 1883; Moldenke, Phytologia 8: 124 (1961), 8: 487 & 488 (1963), and 9: 80—82. 1963.

Watson (1883) says that Palmer 2037 is "probably a hybrid between V. polystachya or V. urticaefolia and V. xutha", but Miss Perry regards it as typical V. ehrenbergiana and I see no reason to doubt this disposition of it.

VERBENA ELEGANS H.B.K.

Additional & emended synonymy: Verbena elegans Humb. & Bonpl. ex Steud., Nom. Bot., ed. 2, 2: 750. 1841. Verbena lamberti Ker es Steud., Nom. Bot., ed. 2, 2: 750. 1841.

Additional & emended bibliography: Hook., Bot. Misc. 1: 169. 1829; Steud., Nom. Bot., ed. 2, 2: 750. 1841; Moldenke, Phytologia 8: 213, 243, 423, 427, & 435 (1962), 8: 487 (1963), and 9: 16, 61, 82-87, 198, 203, 397, & 398. 1963.

It should be noted here that the reference Hook., Bot. Misc. 1: 168 (1829) is often erroneously cited as "1830".

The Arsène 59 distributed as V. elegans is V. teucriifolia Mart. & Gal.

VERBENA ELEGANS var. ASPERATA Perry

Additional & emended bibliography: Moldenke, Phytologia 8: 124 (1961) and 9: 16, 61, 63, 84, 86-89, 156, & 203. 1963.

xVERBENA ENGELMANNII Moldenke

Additional & emended bibliography: G. N. Jones, Fl. Ill. [Am. Midl. Nat. Monog. 2:] 216. 1945; Moldenke, Phytologia 8: 120 & 146 (1961) and 8: 246. 1962; J. D. Poindexter, Trans. Kans. Acad. Sci. 65: 410 & 417. 1962; Moldenke, Phytologia 9: 52, 89-97, 165, 203-204, 215, 219-221, 305, 315, 356, & 359. 1963; Anon., Biol. Abstr. 43 (2): B.112. 1963; J. D. Poindexter, Biol. Abstr. 43: 397. 1963; Moldenke, Résumé Suppl. 7: 1 & 9. 1963.

Shinners 1479 is said to have had "fls. pale bluish-white", but seems otherwise to be typical V. urticifolia L. and is therefore so cited by me. Fassett 20235 is also V. urticifolia and is said by the collector to have been growing in a pasture with V. hastata L. "and an apparent hybrid". J. Torrey 747-0 in the herbarium of the New York State Museum at Albany is inscribed "hybrid between V. urticifolia and V. hastata", but I am citing it hereinafter as typical V. urticifolia. Similarly, R. Bebb 2107 is inscribed as "probably a hybrid form", but I regard it as typical V. urticifolia.

Poindexter (1962) compares xV. engelmannii with its two parents as follows: Leaf index: V. hastata = 3.2-5 (average 4.3), xV. engelmannii = 2.5-3.7 (average 3), V. urticifolia = 1.9-2.6 (average 2.2); leaf-shape: V. hastata = lanceolate, xV. engelmannii = broadly lanceolate to lanceolate, V. urticifolia = broadly lanceolate to ovate; leaf-base: V. hastata = rounded and petiolate, hastately lobed, xV. engelmannii = rounded, decurrent into the petiole, V. urticifolia = rounded, decurrent into the petiole; leaf-apex: V. hastata = gradually acuminate, xV. engelmannii = gradually acuminate, V. urticifolia = gradually acuminate; stem pubescence: V. hastata = strigose, xV. engelmannii = short-hirtellous to strigose, V. urticifolia = hirtellous; nutlet length: V. hastata = 1.5-2 (average 1.7), xV. engelmannii = 1.7-2.2 (aver-

age 1.9), V. urticifolia = 1.6--1.9 (average 1.7); markings on back of nutlet: V. hastata = smooth to faintly striate, xV. engelmannii = moderately ribbed to faintly ribbed or striate, V. urticifolia = moderately ribbed; pollen fertility: V. hastata = 30--99 percent (average 79.8 percent), xV. engelmannii = 25--41 percent (average 31.9 percent), V. urticifolia = 83--99 percent (average 94.2 percent); corolla-tube length: V. hastata = 2--3.9 (average 3.5), xV. engelmannii = 3.2--3.5 (average 3.3), V. urticifolia = 1.5--2.5 (average 2.1); calyx length: V. hastata = 2.4--3 (average 2.7), xV. engelmannii = 2.1--2.7 (average 2.5), V. urticifolia = 1.7--2.3 (average 2); petiole-lateral vein measurement: V. hastata = 12--25 (average 17.6), xV. engelmannii = 16--27 (average 21.5), V. urticifolia = 14--25 (average 19.6).

The G. N. Jones 22387 distributed as this hybrid is actually typical V. urticifolia L., while Eames & Wiegand 12796 distributed as "V. hastata x V. urticifolia" is cited by me hereinafter under V. urticifolia var. leiocarpa Perry & Fernald.

VERBENA EPHEDROIDES Cham.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 602. 1843; Moldenke, Phytologia 8: 148 (1961), 8: 314 & 317 (1962), and 9: 97, 113--114, & 151. 1963; Moldenke, Biol. Abstr. 43: 643. 1963.

xVERBENA FABRICATA Moldenke

Additional bibliography: Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Phytologia 8: 120 (1961) and 9: 114 & 296. 1963.

VERBENA FASCICULATA Benth.

Additional bibliography: Moldenke, Phytologia 9: 114--117 & 394. 1963; Moldenke, Résumé Suppl. 7: 5 & 9. 1963.

xVERBENA FECUNDA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961), 8: 182 & 437 (1962), and 9: 117--118. 1963.

xVERBENA FERAX Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961), 8: 437 (1962), and 9: 118. 1963.

VERBENA FILICAULIS Schau.

Additional & emended bibliography: Moldenke, Phytologia 9: 47, 80, 119--121, 151, 204, & 300. 1963.

Additional citations: BRAZIL: Santa Catarina: J. F. T. Müller s.n. (P.).

VERBENA FLAVA Gill. & Hook.

Additional & emended bibliography: Hook., Bot. Misc. 1: 170. 1829; Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl.

3: 603. 1843; H. S. Marshall, Kew Bull. 1936: 94. 1936; Moldenke, Phytologia 8: 123 (1961) and 9: 11 & 121--123. 1963.

It should be noted here that the reference Hook., Bot. Misc. 1: 170 (1829) given above is often erroneously cited as "1830".

VERBENA GENTRYI Moldenke

Additional bibliography: Moldenke, Phytologia 8: 487 & 496 (1963) and 9: 124--125. 1963.

VERBENA GLABRATA H.B.K.

Additional synonymy: Verbena glabrata Humb. & Bonpl. ex Steud., Nom. Bot., ed. 2, 2: 750. 1841. Verbena glabrata Humb. & Kunth ex D. Dietr., Syn. Pl. 3: 601. 1843.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 601. 1843; Moldenke, Phytologia 8: 314 (1962), 8: 487 (1963), and 9: 11, 125--127, & 151. 1963; Moldenke, Résumé Suppl. 8: 5. 1964.

VERBENA GLANDULIFERA Moldenke

Additional bibliography: Moldenke, Phytologia 9: 127--129 & 397. 1963.

VERBENA GLUTINOSA Kuntze

Additional bibliography: Moldenke, Phytologia 9: 122 & 129--131. 1963.

xVERBENA GONZALEZII Moldenke

Additional & emended bibliography: Moldenke, Biol. Abstr. 39: 614. 1962; Moldenke, Phytologia 8: 274 & 378 (1962) and 9: 131. 1963.

VERBENA GOODDINGII Briq.

Additional & emended bibliography: Tidestr., Contrib. U. S. Nat. Herb. 25: 469. 1925; Moldenke, Phytologia 8: 152 (1961), 8: 177, 213, 378, 381, 397, 399, 436, & 437 (1962), 8: 465 (1963), and 9: 16, 17, 24, 28, 61, 85, 131--141, 143, 144, 155, & 204. 1963; Moldenke, Résumé Suppl. 8: 3. 1963.

Additional common names recorded for this plant are "verbena" and "vervain". The G. J. Ikenberry s.n. [May 1, 1937] and Nelson & Nelson 5025, distributed as this species, are actually V. wrightii A. Gray.

Additional citations: ARIZONA: Coconino Co.: Wiebe 27 (Z). Mohave Co.: C. L. Beach 24 (Z); J. T. Brewer 14 (Z); R. M. Bustamente 30 (Z), 34 (Z); P. Marcus 20 (Z). Yavapai Co.: C. L. Beach 41 (Z); R. M. Bustamente 64 (Z); Clow 18 (Z); L. R. Fitzgerald 44 (Z); R. L. Richards 19 (Z).

VERBENA GOODDINGII var. NEPETIFOLIA Tidestr.

Additional & emended bibliography: Tidestr., Contrib. U. S. Nat. Herb. 25: 469. 1925; Moldenke, Phytologia 8: 124 (1961), 8:

397, 436, & 440 (1962), 8: 464 (1963), and 9: 14, 17, 61, 62, 135—137, 141—146, 154, 155, & 204. 1963.

XVERBENA GOODMANI Moldenke

Additional bibliography: Moldenke, Phytologia 8: 120 (1961) and 9: 147 & 166. 1963.

VERBENA GRACILESCENS (Cham.) Herter

Emended synonymy: Verbena officinalis var. β Hook., Bot. Misc. 1: 160. 1829. Verbena gracilescens Cham. ex Hicken, Chloris Plat. Argent. 197, in syn. 1910.

Additional & emended bibliography: Moldenke, Phytologia 8: 317 (1962), 8: 487 (1963), and 9: 78, 126, 148—154, 204, & 382. 1963; Moldenke, Résumé Suppl. 8: 6. 1964.

VERBENA GRACILIS Desf.

Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; Tidestr., Contrib. U. S. Nat. Herb. 25: 469. 1925; Moldenke, Phytologia 8: 279 & 407 (1962), 8: 464 & 471—473 (1963), and 9: 16, 87, 135, 141, 143, 154—158, 195, 205, 296, 376, & 379. 1963.

Additional citations: ARIZONA: Cochise Co.: A. R. Moldenke 617 (B).

VERBENA GYNOBASIS var. **STRIGOSA** Wedd.

Additional bibliography: Moldenke, Phytologia 9: 159 & 160. 1963.

VERBENA HALEI Small

Additional & emended bibliography: Moldenke, Phytologia 8: 120, 121, 124, & 145 (1961), 8: 212, 231, & 435 (1962), 8: 472, 477, 478, 487, & 488 (1963), and 9: 38, 39, 78, 147, 160—175, 199, & 205, fig. 9. 1963; Moldenke, Résumé Suppl. 7: 1—3. 1963.

The Mrs. Cottrell 8743, Fitzgerald 296, Mrs. A. F. Nelson s.n. [11-2-41], Parks & Cory 10068, Tharp 667 & s.n. [Walnut Cr., 7/12/20], and S. E. Wolff 829 & 1016, distributed as this species, are actually V. xutha Lehm.

VERBENA HASSLERANA Briq.

Additional bibliography: Moldenke, Phytologia 9: 177—178, 367, & 368. 1963.

The Jørgensen 3769 collection is a mixture of this species and V. tomophylla Briq.

VERBENA HASTATA L.

Additional synonymy: Verbena hastata var. pinnatifida Pursh, Fl. Am. Sept. 2: 416. 1814.

Additional & emended bibliography: L., Hort. Upsal. 8—9. 1748; J. A. Murr. in L., Syst. Veg., ed. 13, 62. 1774; Michx., Fl. Bor-Am., ed. 1, 2: 14. 1803; Dum. Cours., Bot. Cult., ed. 2, 2: 623 &

626. 1811; Pursh, Fl. Am. Sept. 2: 416. 1814; Michx., Fl. Bor.-Am., ed. 2, "1" [=2]: 14. 1820; Lehmann, Del. Sem. Hort. Hamb. 1826: 16. 1826; Hook., Comp. Bot. Mag. 1: 176. 1836; Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 600 & 604. 1843; J. Torr. in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128. 1858; Selby, Bull. Ohio Agric. Sta. 83: 329. 1897; L. H. Bailey, Botany 372. 1911; N. Taylor, Mem. N. Y. Bot. Gard. 5 [Fl. Vic. N. Y.] 525. 1915; K. V. O. Dahlgren, Svensk. Bot. Tidsk. 32: 231. 1938; Moldenke, Phytologia 8: 120, 121, & 124 (1961) and 8: 194, 195, 207, 244-246, 254, 257, 279, 280, 316, 317, 380, 382, & 397. 1962; J. D. Poindexter, Trans. Kans. Acad. Sci. 65: 409, 410, & 412-419. 1962; Moldenke, Phytologia 8: 477 & 487-489 (1963) and 9: 54, 83, 85, 89-94, 156, 165, 179-181, 190, 203-238, 267-283, 296, 356, 358, & 359, fig. 10. 1963; Moldenke, Résumé Suppl. 7: 1 & 9. 1963; J. D. Poindexter, Biol. Abstr. 43: 397. 1963; Frei & Fairbrothers, Bull. Torrey Bot. Club 90: 352. 1963; G. N. Jones, Fl. Ill., ed. 3, [Am. Midl. Monog. 7:] 213. 1963; R. A. Ludwig, Ind. Sem. Canada Dept. Agr. 1964: 31. 1964.

It should be noted here that the reference J. Torr. in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128 (1858) is often cited as "Torr. Bot. Mex. Bound. 128". The Selby & Hicks, Bull. Ohio Agric. Sta. 175: pl. 4 (1906) reference is curious — the copy of this bulletin in the library of the New York Botanical Garden does not contain such a plate nor any illustration whatever of V. hastata, but the copy in the library of the Royal Botanic Gardens at Kew does contain this plate, which is identical with the one published in Bulletin 148 (1903).

Hooker (1836) cites a T. Drummond s.n. [New Orleans, 1833] and s.n. [St. Louis] and says "From this the V. paniculata is probably not distinct, and the V. urticaefolia seems too nearly allied". The former, of course, is now regarded as a synonym, but the latter is most abundantly distinct!

Poindexter (1962), in his comparison of V. hastata, V. urticifolia, xV. rydbergii, and xV. engelmannii, describes V. hastata as having a leaf-index of 3.2-5 (average 4.3); Leaf-shape lanceolate; leaf-base rounded and petiolate, hastately lobed; leaf-apex gradually acuminate; stem pubescence strigose; nutlet length 1.5-2 (average 1.7); markings on back of nutlet smooth to faintly striate; pollen fertility 30-99 percent (average 79.8 percent); corolla-tube length 2-3.9 (average 3.5); calyx length 2.4-3 (average 2.7); and petiole lateral vein measurement 12-25 (average 17.6).

The Brubaker 59, Carleton s.n. [July 12, 1888], E. Drummond s.n. [October 1937], J. M. Fogg 18013, G. D. Fuller 5067, Herb. Univ. Okla. 10345, Herb. Univ. Vermont 9581-9, and Ripley s.n. [Sep. 10, 1902], distributed as V. hastata, are all V. urticifolia L.; Ashe s.n. [Roan Mtn., July 1893] is V. urticifolia var. leiocarpa Perry & Fernald; Havard s.n. [San Antonio] is V. wrightii A. Gray; and Ecology Class Univ. Texas s.n. [Palm Grove, 3.1.30], H. B.

Parks s.n. [White Creek, 9-7-47], and Tharp 667 are V. xutha Lehmann.

VERBENA HASTATA f. ROSEA Cheney

Additional bibliography: Moldenke, Phytologia 9: 93, 214, 220, & 281-283. 1963.

VERBENA HASTATA var. SCABRA Moldenke

Additional bibliography: Moldenke, Phytologia 9: 213, 215, & 283-284. 1963.

VERBENA HAYEKII Moldenke

Additional bibliography: Moldenke, Phytologia 9: 285-286 & 296. 1963.

VERBENA HIRTA Spreng.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 604. 1843; Moldenke, Phytologia 9: 288-292. 1963.

The Regnell I.355 [Herb. Rio Jan. 14849], distributed as this species, is actually Lantana camara var. angustifolia Moldenke.

Additional citations: BRAZIL: Santa Catarina: J. F. T. Müller 145 (P).

VERBENA HIRTA var. GRACILIS Dusén

Additional bibliography: Moldenke, Phytologia 9: 289 & 291-292. 1963.

Additional citations: BRAZIL: Santa Catarina: J. F. T. Müller 154 (P).

VERBENA HISPIDA Ruiz & Pav.

Emended synonymy: Verbena glandulosa Morren ex Steud., Nom. Bot., ed. 2, 2: 750, nom. nud. 1841.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 604. 1843; F. Phil., Cat. Pl. Vasc. Chil. 220. 1881; Moldenke, Phytologia 8: 120, 121, & 124 (1961), 8: 200, 201, 254, 257, 317, & 405 (1962), and 9: 44, 50, 51, 66, 114, 219, 286, & 292-299. 1963; Moldenke, Résumé Suppl. 8: 2. 1964.

The Rose & Rose 19072, distributed as this species, is actually V. villifolia Hayek.

Additional citations: CHILE: Nuble: Junge 3181 (W--2404585).

VERBENA HOOKERIANA (Covas & Schnack) Moldenke

Emended synonymy: Verbena crithmifolia ♀ minor Gill. & Hook. in Hook., Bot. Misc. 1: 169. 1829. Verbena crithmifolia var. minor Gill. & Hook. ex Moldenke, Résumé 363, in syn. 1959.

Additional bibliography: Moldenke, Phytologia 8: 123 (1961) and 9: 47, 48, 71, 120, 202, & 299-303. 1963.

The original description of this plant, by Gillies & Hooker (1829) -- a reference, by the way, which is often inaccurately

cited as "1830" — is " β . foliis angustioribus".

VERBENA HUMIFUSA Cham.

Additional bibliography: Steud., Nom. Bot., ed. 2, 2: 750. 1841; Moldenke, Phytologia 9: 303—305. 1963.

xVERBENA HYERIDA Voss

Additional bibliography: L. H. Bailey, Botany 26, fig. 35. 1911; Moldenke, Phytologia 8: 120, 121, 123, & 141 (1961), 8: 183, 257, 280, 316, 427, 435, & 442 (1962), and 9: 40, 87, 90, 160, 190, 305—336, 351—356, & 367—369. 1963; Moldenke, Résumé Suppl. 8: 5. 1964.

Additional illustrations: L. H. Bailey, Botany 26, fig. 35. 1911.

xVERBENA ILLICITA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 121 (1961) and 9: 89, 91—94, 215, 220, & 356—360. 1963; G. N. Jones, Fl. Ill., ed. 3, [Am. Midl. Nat. Monog. 7:] 213. 1963.

VERBENA INAMOENA Briq.

Additional bibliography: Moldenke, Phytologia 8: 255 & 267 (1962) and 9: 360—361. 1963.

VERBENA INCISA Hook.

Additional synonymy: Glandularia incisa (Hook.) Mold. ex Troncoso, Darwiniana 12: 530. 1962.

Additional & emended bibliography: Steud., Nom. Bot., ed. 2, 2: 749 & 750. 1841; D. Dietr., Syn. Pl. 3: 604—605. 1843; Moldenke, Phytologia 8: 120 & 121. 1961; Troncoso, Darwiniana 12: 530—531. 1962; Moldenke, Phytologia 9: 70, 315, 330, 334, 352, & 361—371. 1963; Langman, Biol. Abstr. 42: 596. 1963; Moldenke, Résumé Suppl. 8: 4. 1964.

Troncoso (1962), in an interesting article entitled "El origen del tipo de Glandularia incisa (Hook.) Mold. (sin.: Verbena incisa Hook., en Bot. Mag. 65, pl. 3628. 1838)" says: "Al describir la especie señala su autor que fue coleccionada por Tweedie: 'at Santa Fe, in dry pastures in Porto Alegre Bay (Nos. 504 y 505) and on the shores of the Panama (No. 460)'. Estudiados los tres sintipos del Herbario de Kew, pude comprobar que la cita 'Panama' es un error de impresión. En la etiqueta original del ejemplar No. 460 dice 'this from the coast of the Paraná, flower a soft pink colour'. Se trata, pues, de las costas del río Paraná y muy probablemente en la provincia de Entre Ríos. Glandularia incisa es una especie bastante difundida en nuestro litoral, principalmente en las barrancas del Paraná." She cites Burkart 23455 & 23456 in the Darwinion herbarium from Entre Ríos, Argentina; O. Boelcke 4968, Burkart 12764, Cabrera 7181, and C. M. Hickin s.n. [Puerto Nuevo, XII.1912] in the same herbarium from Buenos Aires.

VERBENA INCISA f. ALBIFLORA Osten & Moldenke

Additional bibliography: Moldenke, Phytologia 9: 366 & 371—372. 1963.

xVERBENA INHONESTA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 121 (1961) and 9: 372. 1963.

VERBENA INTEGRIFOLIA Sessé & Moc.

Additional bibliography: Moldenke, Phytologia 8: 124 (1961) and 9: 372—374. 1963.

xVERBENA INTERCEDENS Briq.

Additional bibliography: Moldenke, Phytologia 8: 121 (1961), 8: 257 (1962), and 9: 374—376 & 404. 1963.

VERBENA INTERMEDIA Gill. & Hook.

Additional bibliography: Hook., Bot. Misc. 1: 166 & 167. 1829; Steud., Nom. Bot., ed. 2, 2: 750 & 751. 1841; D. Dietr., Syn. Pl. 3: 602 & 603. 1843; F. Phil., Cat. Pl. Vasc. Chil. 220. 1881; H. S. Marshall, Kew Bull. 1936: 94. 1936; Moldenke, Phytologia 8: 247, 256, 257, 267, 316—318, 412, 427, & 441 (1962), 8: 463 & 477 (1963), and 9: 67, 151, 154—156, 296, & 375—384. 1963.

It should be noted here that the bibliographic reference Hook., Bot. Misc. 1: 166 & 167 (1829) is often erroneously cited as "1830". Steudel (1841) reduces V. gracilis Cham. to V. tenuis Steud., but it is V. gracilis Desf. which is conspecific with Steudel's plant.

xVERBENA KONDAI Moldenke

Additional bibliography: Moldenke, Phytologia 8: 181 (1961) and 9: 386—387. 1963.

VERBENA LACINIATA (L.) Briq.

Additional & emended bibliography: Hook., Bot. Misc. 1: 168—169. 1829; Steud., Nom. Bot., ed. 2, 1: 584 (1840) and 2: 750. 1841; D. Dietr., Syn. Pl. 3: 604. 1843; F. Phil., Cat. Pl. Vasc. Chil. 220 & 221. 1881; Baeza, Nomb. Vulg. Pl. Silv. Chile, ed. 2, 100, 212, & 269. 1930; Moldenke, Phytologia 8: 123 (1961), 8: 188, 190, 192, 202, 204, 212, 379, 400, 416, 417, 419, 420, & 435 (1962), and 9: 12, 14, 16, 45, 46, 67, 69—72, 76, 87, 88, 117, 128, 130, 156, 197, 301, 302, 304, 386, & 388—404. 1963.

Hooker in his Bot. Misc. 1: 168—169 (1829) — a reference, incidentally, which is often erroneously cited as "1830" — says: "19. Verbena erinoides; caule ascendente ramoso hirto, foliis tripartito-laciniatis hirsutis, laciniis linear-lanceolatis sub-dentatis, spicis axillaribus solitariis laxis, bracteis calycem aequantibus patulis. Spreng. Verbena erinoides. 'Willd. Enum. 686. 12'. Spreng. Syst. Veget. v. 2. p. 750. Verbena multifida. Ruiz et Pav. Fl. Peruv. v. 1. p. 21. t. 33. c. Erinus laciniatus. Linn. Sp. Pl. p. 879. Lychnidea Verbena tenuifoliae folio, vul-

go Sandia-Laguen. Feillée Per. v. 3. t. 25. HAB. Frequens in provinciis Bonariae, Mendozæ et Chile, usque ad alt. 8000 ped. Extremely variable in the relative length and breadth of the leaves: trifid or multifid, the segments narrow and linear, or sometimes ovate and more or less hairy or hispid. The following varieties may be enumerated: α. foliis ovato-lanceolatis inciso-serratis vix trifidis. β. foliis profunde trifidis subtripartitis, lacinis incisis, ultimis ovatis lanceolatis. (V. multifida, Ruiz et Pavon, v. l. p.22. t. 23. f. c.). γ. foliis tri-partitis, lacinis inciso-pinnatifidis ultimis linearis oblongis acutis. δ. foliis bipinnatifidis, segmentis paucis linearibus elongatis, vel etiam foliorum segmentis angusto-linearibus. [p. 169:] ε. foliis bipinnatifidis, segmentis linearibus brevibus, (bracteis plerumque calyce longioribus. An species propria?). ζ. foliis bipinnatifidis, segmentis brevibus oblongis, (caule prostrato foliis pubescenti-incanis. An sp. proprie?). The figures of Feillée, and of Ruiz and Pavon above quoted, are very characteristic of many specimens of our plant, but the former author says the flowers are scarlet, the latter that they are purplish flesh colour; whereas ours are blue. Again, we have specimens which only differ in the leaves being as little cut, or very nearly so, at the margin, as those of V. chamaedrifolia. Both these plants are taken into the genus Erinus by Linnaeus, both are called Melindres by the Spaniards of South America, (the present one M. azules). From all this it would appear that the colour of the flowers, and the more or less deeply incised leaves, are very variable circumstances. To these, again, is very closely allied V. Aubletia, and still more the V. Lamberti. Nay, Sir James Smith, has in Rees' Cyclopaedia given it as his decided opinion that Feillée's Lychnidea t. 25, (the only authority for the Erinus laciniatus of Linn.) should be referred to V. Aubletia: while Mr. Ker, in his Bot. Register, refers it to V. Lamberti, (his V. Aubletia)."

Baeza (1930) records the common names "sandialahuen" and "hierba del cordio", the latter name also applied to V. palma-ta Reiche.

VERBENA LACINIATA var. CONTRACTA (Lindl.) Moldenke

Additional bibliography: Lehm., Del. Sem. Hort. Hamb. 1826: 16. 1826; Moldenke, Phytologia 9: 395, 396, 399, & 401--403. 1963.

VERBENA LACINIATA var. SABINI (Sweet) Moldenke

Additional bibliography: Moldenke, Phytologia 9: 394, 396, & 402--403. 1963

VERBENA LANDBECKI R. A. Phil.

Additional bibliography: F. Phil., Cat. Pl. Vasc. Chil. 220. 1881; Moldenke, Phytologia 9: 375 & 403--404. 1963.

VERBENA LASIOSTACHYS Link

Additional bibliography: Lehmann, Del. Sem. Hort. Hamb. 1826: 16. 1826; Steudel, Nom. Bot., ed. 2, 2: 750. 1841; Dietrich, Syn. Pl. 3: 602. 1843; J. Torrey in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128. 1858; A. Gray, Syn. Fl. N. Am. 2 (1): 336. 1878; Moldenke, Phytologia 8: 121, 124, & 142-144 (1961), 8: 267, 268, 272, 279, 427, & 435 (1962), 9: 16, 83, 166, 215, 296, 372, & 404-407 (1963), and 9: 459-467. 1964.

It should be noted here that the bibliographic reference J. Torrey in Emory, Rep. U. S. & Mex. Bound. Surv. 2: 128 (1858) is often cited as "Torrey. Bot. Mex. Bound. 128". Steudel (1841) affirms that Sprengel regarded V. lamberti Ker as a synonym of V. prostrata Ait.

VERBENA LILACINA Greene

Additional synonymy: Verbena harbisonii Moldenke, Phytologia 1: 438-439. 1940.

Additional bibliography: Moldenke, Phytologia 1: 438-439 (1940) and 1: 511. 1941; Moldenke, Alph. List Cit. 1: 256. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 242. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 63. 1948; Moldenke, Alph. List Cit. 2: 488 (1948) and 4: 1242. 1949; Moldenke, Résumé Suppl. 8: 1 & 5. 1964.

The type of V. harbisonii is C. F. Harbison s.n. from Agua del Refugio, Baja California, Mexico, collected on April 1, 1935, and deposited in the herbarium of the San Diego Society of Natural History at San Diego. Hitherto I have regarded this and V. lillacina as separate species, but recent material collected by Moran on Cedros Island and on the mainland seems to indicate that the two are conspecific. Moran describes the plant as a bushy herb or rounded shrub 1 meter tall. It has been found on silty flats, at altitudes of 10 to 1100 meters.

Additional citations: MEXICO: Baja California: C. F. Harbison s.n. [Agua del Refugio, April 1, 1935] (Du--244976, Gg--328000, N, N-photo, Sd--11808, Z-photo); R. V. Moran 8195 (Z). CEDROS ISLAND: R. V. Moran 10669 (Z).

VERBENA LITORALIS H.B.K.

Additional bibliography: Baeza, Nomb. Vulg. Pl. Silv. Chile, ed. 2, 233 & 269. 1930.

VERBENA MACDOUGALII Heller

The Richardson 26 and Hinckley s.n. [June 1936] collections, cited below, being from the White Mountains, may have been gathered in either Lincoln or Otero Counties. Arsène 18691 bears a printed label inscribed "PL. du MEXIQUE", which is certainly an error because beneath it is written "Las Vegas Jardin". V. M. Spalding's surname is erroneously written "Spaulding" in the University of Arizona herbarium.

Curtin (1947) says "The other two flowers that are called dormilon, meaning sleepy-head, are yellow, but this variety is purple, and is more often referred to as vervena. Children appar-

ently take the keenest pleasure in inflicting minor injuries upon their playmates; the New Mexican boys have found that one of the easiest methods of accomplishing this is by striking an unsuspecting companion on the bare legs with a whip of vervena. With this, it won't be long before he becomes sufficiently angry for all purposes of amusement. The plant evidently has some irritating hairs that penetrate the flesh aside from the actual impact of the blows, and is therefore particularly fine for arousing the fury of one's companions. As a diuretic, a tea of the vervena is drunk for nine mornings; and, at Mora, for toothache, the green leaves are mashed and placed inside the mouth on the gums and on the cheek. When not speaking of plants, the use of the name dormilon applies to a bat."

Perry (1933) cites the following 23 additional specimens not as yet seen by me: WYOMING: Laramie Co.: A. Nelson 8354 (E). UTAH: Juab Co.: M. E. Jones 6026 (E). COLORADO: Archuleta Co.: C. F. Baker 565 (E, F, G). NEW MEXICO: Bernalillo Co.: Ellis 258 (E). Lincoln Co.: Wooton 208 (E). San Miguel Co.: Anect 57 (G); Mulford 39 (E); P. C. Standley 4223 (E, F, G), 4927 (E, F, G). Santa Fe Co.: Brandegee s.n. [1889] (E); Greene 77 (N). County undetermined: Fendler 597, in part (E). ARIZONA: Apache Co.: H. C. Hanson A.148 (E, F). Coconino Co.: MacDougal 249 (D—isotype, F—isotype, G—isotype). She says "This southwestern representative of V. stricta is readily distinguished by the short-petiolate elongated leaves, the compact spikes, and the floral bracts surpassing the calyx." Her "Greene 77" is probably what is cited by me hereinafter as "F. S. Earle 77".

In all, 251 herbarium specimens, including the type collections of most of the names involved, have been examined by me.

Citations: UTAH: Juab Co.: M. E. Jones 6026 (Ca--159625, N, Po—70877, W—249917). COLORADO: Alamosa Co.: Ramaley 15808 (Bl—42340). Archuleta Co.: C. F. Baker 565 (B, Ca--104838, N, Po—64521, W—369090); Bethel s.n. [Pagosa Springs, 7-1897] (Fc), s.n. [Pagosa Springs, Aug. 20, 1917] (Fc); Schmoll 1376 (Bl—42333); Wooton 2837 (W—737205). Conejos Co.: Ramaley 12998 (Bl—42341); W. A. Weber 7865a (Ca—964646, Ok, St, W—2054906). El Paso Co.: Osterhout s.n. [Palmer Lake, July 22, 1895] (N). Huerfano Co.: Shear 3577 (N); Vreeland 636 (N, N). La Plata Co.: H. Hapeman s.n. [Durango, Aug. 29, 1918] (Hp). Las Animas Co.: Beckwith 138 (N), 160 (Du—123489), 166 (Gg—31383). Mineral Co.: Ramaley 16531 (Bl—42338). County undetermined: Herb. State Agr. Coll. Colo. 2027 (Fc). TEXAS: Culberson Co.: Grassl 175 (Fs, I, Mi). County undetermined: O. M. Clark 4410 [North Jemez Springs] (B). NEW MEXICO: Bernalillo Co.: C. C. Ellis 258 [Capulin Cañon] (W—890739), 258 [Las Huertas Cañon] (W—662673); Koelz s.n. [Sandia Mts., August 23, 1926] (Mi); Negard 7408 [23] (S). Catron Co.:

Eggleston 2-260 (W-152448); A. R. Moldenke 154 (Fg), 156 (Fg), 629 (B, Fg, S). Chaves Co.: Moldenke & Woods 609 (S). Colfax Co.: Berg s.n. [Vermejo River, June 29, '97] (Fc-4875); P. C. Standley 14224 (N); Wooton s.n. [Vermejo Park, Aug. 31, 1913] (N, N, W-662229). Lincoln Co.: Cory 33289 (N); Eggleston 18879 (W-1533602); G. L. Fisher 36122 (Ew, W-1679367), s.n. [Ruidoso, Aug. 5, 1931] (Bt-35842, Gg-219620), s.n. [Alto, July 21, 1936] (St-17379, St); J. H. Grant s.n. [Capitan Mts., Aug. 11, 1903] (W-499576); Hinckley 747 (Au, N), s.n. [Ruidoso, June 1936] (Fs), s.n. [White Mts., June 1936] (Au, Au); Richardson 26 (Po-202231); Steiger 1189 (N); Tucker 3208 (Ok), 3209 (Z); Wooton 208 (Ca-104839, Ka, N, Po-70559, Po-267630, Ur, W-330433), s.n. [Divide, June 25, 1895] (W-562251), s.n. [vicinity of Gilmore's Ranch, July 27, 1901] (W-736878); Wooton & Standley 3497 (Du-24189, Fs, Mn-6894, Or-8867, Pl-36306, W-561430), 3597 (W-562148), 3651 (Du-24178, Hp, Or-8855, W-562149). Mora Co.: Arsène 19131 (N, Po-148790); Bacigalupi 585 (Ca-882663, Du-286384). Otero Co.: Hershey s.n. [Mayhill, 8/18/39] (Gg-310866); A. R. Moldenke 639 (S); Moldenke & Woods 607 (S); Orcutt s.n. [Cloudcroft, July 23-26, 1926] (Sd-23261); R. B. Randall s.n. [Cloudcroft, July 28, 1932] (Sd-6254); E. D. Schulz 255 (N), 549 (Wi); V. M. Spalding 111 (Tu-98880); E. Stearns 342 (W-691013), 358 (W-690992); Waterfall 12464 (Mi, St, W-2231211); C. B. Wolf 2778 (Ba, Du-192373, Gg-175412, Rs-9994); Wooton s.n. [Cloudcroft, June 30, 1899] (W-736879, We), s.n. [Fresnal, July 21, 1899] (Po-70881, Tu), s.n. [Toboggan, July 31, 1899] (W-736880), s.n. [Mescalero Reservation, July 21, 1905] (W-562250); M. S. Young s.n. [High Rolls, 7/31/16] (Au). Rio Arriba Co.: P. C. Standley 8239 (W-687157). Sandoval Co.: Hershey s.n. [Jemez Mts., 1937] (Bt-58319); A. Nelson 11556 (Ca-500724); A. D. Read 19 (W-890407); Rousseau 35026 (Um-237). San Juan Co.: Klinger & Flory 265 (Tu-111520). San Miguel Co.: Anect 211 (Gg-31382, N), 299 (Vi); H. S. Barber 152 (W-564809); Cockerell s.n. [Upper Pecos] (Bl-42327); Creasy s.n. [Sept. 27, 1951] (We); B. B. Harris s.n. [Las Vegas, 6-24-31] (Nt); G. T. Hastings s.n. [Las Vegas, July 4, 1927] (N); Lundell & Lundell 14485 (Ld); Mulford 39 (Io-33457, Ur); Ramaley 5217 (Bl-42328); Mrs. St. John s.n. [west of Las Vegas] (Po-70557); P. C. Standley 4223 (N, W-498589), 4927 (N, W-498950); Studhalter & Marr 1836 (Mi). Santa Fe Co.: Bertaud 163 (N); F. S. Earle 77 (N); Eastwood 15618 (Gg-161749); Edwards s.n. [Santa Fe, July 10th, 1847] (T); D. R. Goddard 855 (Ca-500921); McBreen s.n. [July 6, 1963] (B); A. Nelson 11556 (S, S); Osterhout 7028 (Po-183061); Pringle s.n. [near Glorieta, 26 Aug. 1886] (Vt); Renner 43459 (Ca-137931);

Rose, Fitch, & Parkhurst 17717 (W-760794); Sagalyn 8 (Ms.). So-corro Co.: Clear s.n. [Los Alamos, July 16, 1947] (Gg). Taos Co.: C. C. Albers 47079 (Au); Eggleson 19277 (N, W-1533909); Waterfall 12250 (St); Whitehouse s.n. [Taos, 9.7.1929] (Au); Whiting 10012 (Dt). Union Co.: P. C. Standley 6065 (W-685100). Valencia Co.: Wooton s.n. [mts. west of Grant's Station, Aug. 1st, 1892] (W-241162), s.n. [west of Grant's Station, Aug. 2, 1892] (C, Ur, W-735991). County undetermined: T. S. Brandegee s.n. [1879] (Ca-169647); De Busk 7169 [Bonito Dam] (Tu-104394); Mize s.n. [Castilla Range, Aug. 16, 1899] (Gg-31384); Vasey s.n. [N. Mex.] (Pa). ARIZONA: Apache Co.: L. D. Benson 9573, in part (Po-267652); Eggleson 17106 (N, Vi); R. S. Ferris 1235 (Du-91468), 10158 (Ca-882665, Du-282088); Frisbie & Burk 3 (Fg-7399); S. W. Hutchinson 7334 (En); A. R. Moldenke 152 (Fg), 627 (B, S). Coconino Co.: Borell s.n. [Sept. 22, 1934] (Ca-526337); Collector undesigned s.n. [Flagstaff, 7-24-10] (Fg-8033); Collom 634 (Fg-111426), 729 (W-1729454); Deaver 4163 (Fg-7332); O. Degerer 4475 (N), 4538 (N); Demaree 42850 (Gg), 46119 (S); Eastwood & Howell 6392 (Gg-261706, W-1733005); Eggleson 10201 (W-767199); Ellison 1098 (La); Goodding 1491 (Fg-8034); E. L. Greene s.n. [Flagstaff, 14 July 1889] (Ca, Ca-192903, Du-91134); H. C. Hanson 1448 (Ur), A.1448 (Au, Or-20490, Up-80667); M. E. Jones 6054w (Po-70876, W-249916), s.n. [Flagstaff, Aug. 29, 1884] (Po-71017); Kearney & Peebles 12195 (Gg-267623, To), 13757 (Gg-263282, N, To); H. E. Lee s.n. [2 miles west of Flagstaff, 9-19-36] (Ca-882664, Tu); Leiberg 5882 (W-410707); Logmis 3242 (To); MacDougal 249 (Ca-104837—isotype, Dp—isotype, Io-38757—isotype, N-type, Tu—isotype, W-334346—isotype); A. R. Moldenke 150 (B, Fg, S); Monachino s.n. [Oct. 10, 1950] (N, Qu); E. Moore s.n. [Ft. Valley, 8.7.29] (Au); Nickell s.n. [Aug. 26, 1956] (St); K. F. Parker 5934 (Ca-736881, N); Riordan 1 (Tu); H. H. Rusby 780, in part (Fs, La, Mi, Mi), 6121 (W-117588), s.n. [Clark's Valley, Aug. 1, 1883] (C, Ca-67978, Up-17118, W-56217, W-771846); P. O. Schallert s.n. [7/18/43] (Ur), s.n. [west of Bellemont, 7/22/43] (N); Strickland s.n. [Grand Canyon, July 31, 1951] (Fg-7359); W. R. Taylor s.n. [July 29, 1926] (Gg-145330); L. F. Ward 11 (W-404516). Navajo Co.: Pultz 1724 (Gg-326019). Pima Co.: Spalding 20 (Tu, Tu). Yavapai Co.: H. H. Rusby 780, in part (Pr). County undetermined: H. C. Hanson s.n. [North-eastern Arizona] (Bl-42388). CULTIVATED: New Mexico: Arsène 18691 (B, N). LOCALITY OF COLLECTION UNDETERMINED: Baldwin s.n. [June 10th, 1819] (T).

VERBENA MACDOUGALII f. ALBIFLORA Moldenke, Phytologia 2: 424. 1948.
Bibliography: Moldenke, Phytologia 2: 424. 1948; Moldenke, Cas-

tanea 13: 112. 1948; Moldenke, Alph. List Cit. 2: 506 (1948) and 3: 839. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 20 & 198. 1949; Moldenke, Résumé 25 & 472. 1959; Moldenke, Résumé Suppl. 3: 6 (1962) and 5: 3 & 4. 1962.

This form differs from the typical form of the species in having white corollas.

The type of the form was collected by Francis Ramaley (no. 16847) at Alamosa Canyon, Alamosa County, Colorado, at an altitude of 8000 feet, on September 14, 1938, and is deposited in the herbarium of the University of Colorado at Boulder. The collector notes that the plant is "rare". It has been found at altitudes of 7800 to 8000 feet, flowering in September.

In all, 3 herbarium specimens have been examined by me.

Citations: COLORADO: Alamosa Co.: Ramaley 16847 [Alamosa, Sept. 14] (Bl--42339--type). Rio Grande Co.: Ramaley 16847 [Monte Vista, 15.IX.1938] (Ca--754136). NEW MEXICO: Otero Co.: Wooton s.n. [Fresnal, July 21, 1899] (W--736877).

VERBENA MACDOUGALII mut. ROSELLA Cockerell, Am. Nat. 36: 809. 1902.

Bibliography: Cockerell, Am. Nat. 36: 809. 1902; Perry, Ann. Mo. Bot. Gard. 20: 288 & 355. 1933; Moldenke, Prelim. Alph. List Invalid Names 47. 1940; Moldenke, Alph. List Invalid Names 48. 1942; Moldenke, Résumé 369. 1959; Moldenke, Résumé Suppl. 5: 4 & 7. 1962.

This mutant differs from the typical form of the species in having pink corollas.

The type of the mutant was collected by Mrs. O. Saint John at the foot of Baldy Mountain, near Elizabethtown, Colfax County, New Mexico, in October, 1898, and is deposited in the United States National Herbarium at Washington. The collector states that purple-flowered specimens were growing at the same locality.

As yet only the type specimen has been examined by me.

Citations: NEW MEXICO: Colfax Co.: Mrs. O. Saint John s.n. [Foot of Baldy Mt. near Elizabethtown, Oct. 1898] (W--404921--type).

VERBENA MACRODONTA Perry, Ann. Mo. Bot. Gard. 20: 289—290, pl. 13, fig. 1—4, & 14. 1933.

Bibliography: Perry, Ann. Mo. Bot. Gard. 20: 249, 250, 260, 289—290, 355, 358, & 360, pl. 13, fig. 1—4, & 14. 1933; A. W. Hill, Ind. Kew. Suppl. 9: 294. 1938; Worsdell, Ind. Lond. Suppl. 2: 486. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 19 & 101 (1942) and [ed. 2], 33 & 198. 1949; Moldenke, Résumé 39 & 472. 1959.

Illustrations: Perry, Ann. Mo. Bot. Gard. 20: pl. 13, fig. 1—4, & 14. 1933.

Coarse plant, with biennial or perennial base; stems 1—1.5 m. tall, erect, branching, hirsute-hispidulous; leaves large, thickish in texture, decussate-opposite; petioles short, 1—2 cm. long, margined; leaf-blades elongate-ovate, 10—14 cm. long, cuneate at the base and narrowed into the petiole, coarsely and sharply bi-

serrate-dentate with mucronate teeth, rugose with impressed veins and scabrous-hirsute with minutely pustulate hairs above, prominently veined and hirsute beneath; spikes panicled, subtended by leafy bracts, dense before anthesis, becoming elongated and open in fruit, glandular-hirsute; floral bractlets lanceolate-linear, approximately equaling the fruiting-calyx, subulate at the apex, ciliate along the margins; calyx 5 mm. long, glandular, somewhat viscid-pubescent, the teeth 1.5 mm. long, subulate; corolla deep-violet, its tube protruding a little beyond the calyx, glabrous or puberulent on the outer surface, the limb 5--6 mm. wide; cocci trigonous, 2 mm. long, shallowly scrobiculate on the upper half, tending to be sulcate toward the base, the commissural face muriculate.

The type of this little-known species was collected by Edward William Nelson and Edward Alphonso Goldman (no. 7425) on the road from Miraflores to San Bernardo Ranch in the Sierra La Laguna, at an altitude of about 750 meters, Baja California, Mexico, on January 20, 1906, and is deposited in the herbarium of the Missouri Botanical Garden at St. Louis. Perry cites also an isotype in the United States National Herbarium at Washington. She says "Verbena macrodonta is a coarse plant with large thickish leaves and open inflorescence, in a measure similar to V. MacDougalii, but differing in its less strict habit, somewhat remote fruits, more glandular calyces, and shorter plumper nutlets."

Carter describes the plant as "occasional in dry northeast-facing slope in decomposed granite with Quercus idonea, Lysiloma microphylla, and Jatropha", at an altitude of 900 meters. It has been collected flowering and fruiting in April and October. Herbarium material has been misidentified and distributed under the name V. prostrata R. Br.

Only 4 herbarium specimens and 1 mounted photograph have been examined by me.

Citations: MEXICO: Baja California: T. S. Brandegee s.n. [Canon San Bernardo, Oct. 13, 1893] (Ca--104845); A. Carter 2676 (Ca-916208, Du-344053, W-2023100). MOUNTED CLIPPINGS: Perry, Ann. Mo. Bot. Gard. 20: 360, pl. 14. 1933 (W--photo of type).

VERBENA MACROSPERMA Speg., Rev. Argent. Bot. 1: 218--220. 1926.

Bibliography: Speg., Rev. Argent. Bot. 1: 218--220. 1926; A. W. Hill, Ind. Kew. Suppl. 8: 246. 1933; Fedde, Bot. Jahresber. 59 (2): 417. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 44 & 101 (1942) and [ed. 2], 106 & 198. 1949; Moldenke, Résumé 127 & 472. 1959.

Nothing is known to me about this species except what is stated relative to it in Spegazzini's original description, which is repeated herewith: "Leptostachya, perennis; caudice gracili subterraneo, multiceps ramis gracilibus radiatim diffusis prostatisque, ramulis erectis v. adscendentibus, hispido-puberulis, foliis oppositis, subconfertis parvis petiolatis, limbo circumscriptione obovato, pinnatum 3--5-partito, pinnis 2--5-fidis, lob-

ulis obtusiusculis planis, margine non revolutis, totis minute densiusculeque puberulo-hirtis, e virescenti subcanescentibus; inflorescenti solitariis subsessilibus acrogenis v. alaribus, erectis, spiciformibus subcylindraceis densiusculis 10—20-floris, calycibus cylindraceo-subfusoideis, 5-sulcato-costatis, viridi-purpurascentibus dense patentiusculeque hispido-puberulis, sessilibus, bracteola linear-lanceolata triplo breviore fultis, dentibus brevissimis obtuse calloso-cuspidatis, inaequalibus, anticus conspicue validioribus; corolla tubulosa ochroleuca, glabra, sat exserta; nuculae pro ratione magnae, subcylindraceae, obtusiusculae, glabrae, dense irregulariterque ruguloso-reticulatae, castaneo-purpurascentes nitidulae, e calycis dorso longitudinaliter fisso protrudentes.

"Hab. En los faldeos de las barrancas de los alrededores de Talagapa [Río Negro, Argentina].

"Obs. Especie que a primer vista recuerda ciertas formas de la *Verbena crithmifolia* Gll. & Hk., de la cual se aparta por las lacinias de las hojas no lineares y totalmente planas y por los dientes del cáliz, principalmente los posteriores, calloso-cuspidados y de la *Verb. pinnatisecta* Schr. por la pubescencia tupida y enderezada de todas sus partes.

"El rizoma debe hallarse plantado bastante profundamente en el suelo, siendo casi vertical y leñoso, produciendo a flor de tierra numerosas ramitas que se extienden radialmente sobre el suelo pero sin producir raíces adventicias; estas ramitas (50—100 mm lng. x 0.50—1.25 mm diá.) son casi cilíndricas todas revestidas de pubescencia fina enderezada, y en la parte apical se arquean y tienden algo a enderezarse, ofreciendo internodios bastante regulares (8—12 mm lng.) separados por nudos poco o nada hinchados y que suelen llevar ramitas enderezadas débiles (25—40 mm alt.) también ceniciente-pubescentes. Las hojas todas hispido-pubescentes, opuestas, tienen un peciolo (2,5—5 mm lng.) semicilíndrico al dorso, ligeramente cóncavo al vientre que lleva la lámina de circunscripción anchamente ovalada (6—7 mm lng. x 5—7 mm lat.) generalmente tripartida (rara vez pinado-5-partida) con los lóbulos cortamente peciolulados, los dos laterales exteriormente 1-dentados y el impar central trífido, siendo los dientes y la extremidad de los lóbulos cuneado-redondeada bastante obtusa; las inflorescencias son al principio apicales (y en muchos casos así permanecen), pero lo más a menudo se desarrolla en su base de inserción una ramita más o menos larga que las vuelven entonces pleurogenas y axillares, siendo desde la juventud espiciformes cilíndricas enderezadas (30 mm lng. x 8—10 mm diá.) llevadas por un corto pedicelo (5—15 mm lng.) robusto hispido pubescente y formadas por unas 10 a 20 flores recostadas contra el eje y muy poco divergentes, yendo cada flor sésil acompañada de una bracteita lanceolado-lineal (3,5—4 mm lng. x 0.75—1 mm lat.) aplicada contra el cáliz, plana y adelgazada en punta relativamente angosta, pero no muy aguda; el cáliz de color verde oscuro más o menos ceniciente por la pubescencia, es cilíndrico-subfusoideo (7—9 mm lng. x 2 mm diá.) ligeramente cuneado-redondeado en la

base, ligera y suavemente enangostado en la mitad superior, para terminar en 5 dientecillos, algo diferentes de largo, muy cortos y pequeños, rematados por un callo obtuso que en los dos anteriores constituye mucrón largo bien saliente y visible; la superficie del cáliz está recorrida por 5 costillas obtusas (y otros tantos surcos) longitudinales que a la madurez suelen tomar color morado oscuro y se abre de arriba abajo a lo largo de la línea mediana dorsal y por allí expulsa las núcules que habían madurado en él; la corola es tubulosa (12 mm lng. x 0.75 mm diá.), superando durante el ántesis el cáliz por una tercera parte, ostentando color amarillento pálido y 5 lóbulos oblóngos bien extendidos y casi iguales; los estambres están pegados en la misma garganta cuyo ósculo obstruyen sin sobresalir, con filamentos muy cortos y anteras amarillas, de bolsas pilínicas poco desiguales y absolutamente sin glándulas apicales; el estilo es muy delgado-lampiño alcanzando los estambres para dividirse en dos costas ramitas estagmáticas; el ovario subcilíndrico es lampiño y verde. Las núcules son 4, formando columna cilíndrico-tetragono y al henderse el cáliz, se sueltan y caen, siendo así cada una casi cilíndrica (3.5—4 mm lng. x 1 mm diá.) convexa al dorso, donde ofrece de 3 a 5 estrías longitudinales y algunas reticulaciones, algo lustrosas, y al vientre ostenta una angosta línea longitudinal hundida y lisa; la extremidad superior es redondeada obtusa, la basal cortada en bisel."

VERBENA MALMII Moldenke, Phytologia 2: 475—476. 1948.

Synonymy: Verbena malmei Moldenke ex Angely, Fl. Paran. 16: 78. 1960.

Bibliography: Moldenke, Phytologia 2: 475—476. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 94 & 198. 1949; Moldenke, Phytologia 3: 454. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 263. 1953; Moldenke, Inform. Mold. Set 48 Spec. [4]. 1954; Angely, Fl. Paran. 7: 13. 1957; Moldenke, Résumé 110 & 472. 1959; Angely, Fl. Paran. 16: 78 (1960) and 17: 46. 1961; Moldenke, Résumé Suppl. 3: 40. 1962.

Shrubby perennial plants to 3 m. tall, much-branched; branches and branchlets green, acutely tetragonal, completely glabrous throughout, shiny, often sulcate between the angles; twigs numerous, ascending-erect, slender, acutely tetragonal, green and shiny, glabrous; principal internodes 2—5 cm. long; nodes not annulate; leaves very tiny and indistinct, giving the plant an aphyllous appearance, sessile, oblong or linear, rather firm-textured, uniformly bright-green on both surfaces, decussate-opposite, ascending, 3—8 mm. long, about 1 mm. wide, appressed-strigillose on both surfaces, acute at the apex, 1-veined, the midrib slightly elevated beneath and subimpressed above; inflorescence spicate, very abundant, usually in groups of 3 at the tip of each twig, often aggregated in paniculate fashion, the terminal spikes usually short-pedunculate, the lateral ones longer-pedunculate, the floriferous portion elongating to almost 3 cm. after anthesis; peduncles very slender, glabrous or minutely strigillose, 3—15 mm. long, tetragonal, green; rachis rather

densely strigillose-puberulent with whitish hairs especially visible after the calyxes have fallen off; bractlets lanceolate, very small and obscure, about 1 mm. long, strigose with subappressed antrorse whitish hairs, acute at the apex; calyx tubular, about 3 mm. long, densely white-strigose with appressed antrorse hairs, the rim 5-apiculate; corolla blue, its tube about 4 mm. long, glabrous except at the very apex where it is densely white-strigose like the calyx, its limb 3-4 mm. wide, puberulent in the throat within and strigose at the base outside, the lobes glabrous on both surfaces.

The type of this species was collected by Gustaf Oskar Andersson Malme (no. 1141) — in whose honor it is named — in a swamp at Villa Rica, Rio Grande do Sul, Brazil, on January 22, 1902, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The species is obviously closely related to V. alata Sweet and V. ephedroides Cham. and more intensive study is required of these taxa when more material is available. It appears to inhabit shrubby marshes, flowering in December and January. Herbarium material has been misidentified and distributed as V. isabellei Briq.

In all, 9 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Paraná: Dusén 2788 [Herb. Mus. Nac. Rio Jan. 46569] (N); Hatschbach 2562 (N), 3761 (Z). Rio Grande do Sul: Malme 1141 (F—photo of type, N—isotype, N—photo of type, S—type, Si—photo of type, Z—photo of type); Rambo 38254 (N), 39352 (N), 50026 (Le, S).

VERBENA MARITIMA Small, Bull. N. Y. Bot. Gard. 3: 436. 1905.

Synonymy: Glandularia maritima Small, Man. Southeast. Fl. 1138 & 1508. 1933. Glandularia maritima (Small) Small apud A. W. Hill, Ind. Kew. Suppl. 9: 124. 1938. Verbena aubletia var. maritima Curtiss ex Moldenke, Addisonia 21: 60, in syn. 1942. Grandularia maritima Small ex Moldenke, Alph. List Invalid Names Suppl. 1: 10, in syn. 1947.

Bibliography: Small, Bull. N. Y. Bot. Gard. 3: 436. 1905; Fedde in Just, Bot. Jahresber. 33 (1): 632. 1906; Prain, Ind. Kew. Suppl. 3: 187. 1908; Small, Fl. Miami 159. 1913; Small, Fl. Fla. Keys 128. 1913; Moldenke, List Spec. Mold. Southeast. Set 10. 1933; Small, Man. Southeast. Fl. 1138 & 1508. 1933; Perry, Ann. Mo. Bot. Gard. 20: 248, 311, 320—321, & 355. 1933; J. A. Harris, Physico-chem. Prop. Plant Saps 173. 1934; A. W. Hill, Ind. Kew. Suppl. 9: 124. 1938; Moldenke, Annot. & Classif. List 108. 1939; Moldenke, Prelim. Alph. List Invalid Names 26. 1940; Moldenke, Alph. List Invalid Names 25. 1942; Moldenke, Addisonia 21: 59—60, pl. 702. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 5 & 101. 1942; Schnack & Covas, Darwiniana 6: 475. 1944; Moldenke, Bot. Gaz. 106: 159. 1945; Moldenke, Am. Midl. Nat. 32: 576. 1945; Moldenke, Am. Journ. Bot. 32: 609. 1945; Moldenke, Alph. List Cit. 1: 22, 138, 139, 152, 155, 267, 279, 291, & 294.

1946; Moldenke, Alph. List Invalid Names Suppl. 1: 10 & 22. 1947; Moldenke, Phytologia 2: 238—240, fig. 2. 1947; Moldenke, Alph. List Cit. 2: 393, 400, 409, 469, 494, 510, 512, 513, 518, 523, & 574 (1948), 3: 660, 717, 720, 721, 741, 755, 777, 778, 800, 851, 852, 931, 941—944, & 948 (1949), and 4: 1112, 1117, 1118, 1138, 1177, 1188, 1192, 1193, 1216, 1243, & 1296. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 10 & 198. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 14. 1949; Moldenke, Am. Wild Fls. 292 & 450. 1949; Moldenke, Inform. Mold. Set 51 Spec. 4. 1956; Moldenke, Résumé 13, 296, 297, 358, 424, & 472. 1959; Moldenke, Résumé Suppl. 1: 2 (1959), 3: 3 & 32 (1962), and 4: 3. 1962; Moldenke, Phytologia 8: 434 & 435 (1962) and 9: 194. 1963.

Illustrations: Moldenke, Addisonia 21: pl. 702 (in color).

1942; Moldenke, Phytologia 2: 239, fig. 2. 1947.

Herbaceous perennial plants, decumbent or trailing; roots fibrous; stems several or numerous, slender, decumbent or prostrate, creeping or trailing, branched at the base, sparingly pubescent or glabrate; branches smooth or sparingly pubescent; leaves decussate-opposite, numerous, thick-textured; petioles 2—4 mm. long, smooth or sparingly pubescent; leaf-blades bright-green, cuneate to orbicular-ovate or obovate, 1—6 cm. long (usually 1—4), 1.2—2.5 cm. wide, tapering regularly in cuneate fashion to the margined petiole, incised-dentate or somewhat lobed, broadly obtuse or acute at the apex, sparsely pubescent or glabrate on both surfaces; inflorescence terminal, the spikes pedunculate, subcapitate or fascicle-like during anthesis, becoming elongated to as much as 7 cm. in fruit, densely many-flowered; flowers showy, blooming practically throughout the year in terminal flat-topped clusters; bractlets persistent, lanceolate or linear-lanceolate, green, about half as long as the calyx, acuminate at the apex, pubescent on the back, ciliate-margined; calyx slender, tubular, 10—12 mm. long, about 2 mm. in diameter, appressed-pubescent with often glandular hairs, conspicuously 5-ribbed, its rim 5-toothed, with short, slender, subulate, unequal teeth, 2 of which are about 2 mm. long, the 3 others about 1 mm. long; corolla hypocrateriform, varying from blue or blue-purple to purple, pinkish-purple, lilac-purple, rose-purple, or lavender, the lower surface much paler than the upper, its tube narrowly cylindric, 1 1/2 to 3 times as long as the calyx, finely or densely pubescent on the outer surface, the limb wide-spreading, deeply 5-parted, 10—15 mm. wide, the lobes obovate, deeply notched at the apex; stamens 4, inserted in pairs at two levels near the mouth of the corolla-tube, entirely included; filaments slender, very short; anthers small, oblong, with or without glands; pistil single, compound; style slender, smooth, 1.6—1.8 cm. long, shortly 2-lobed at the apex, the posterior lobe smooth and non-stigmatiferous, the anterior lobe broader, papillose, and stigmatic; ovary 4-sulcate, 4-celled; fruiting-calyx 10—13 mm. long, appressed-pubescent on the outside, often glandular, the teeth short, slender, subulate, enclosing the fruit; cocci 4, subcylindric, dark-brown, crustaceous, 1-seeded, about 1 mm. long, scrobiculate,

with a broadened base, the commissural surface narrow and muriately roughened.

The type of this handsome endemic species was collected by John Kunkel Small and Joel Jackson Carter (no. 1077) between Cutler and Longview Camp, Dade County, Florida, between November 9 and 12, 1903, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is found chiefly in the coastal counties of Florida from Monroe north to Flagler and Saint Johns and on the west coast to Lee, with a record from Lake County in the interior. Typically it inhabits sandy ridges bordering the ocean, sand-dunes, and even the beaches themselves, but occurs also in coastal and dune hammocks, low pinelands, flatwoods, and kitchen-middens, preferring sandy or dry sandy soil. It has been collected in virgin glade soil, in the vicinity of hammocks, in pinelands, along roadsides and sandy roads, on sandy beach ridges, and on rocks in tropical pinelands, in anthesis from November to August, and in fruit in January, March, April, May, and July. The only recorded popular name is "beach vervain".

O'Neill found 32 plants of this species per acre in Flagler County in 1929. Atwater reports it "common" in pinewoods and glades in Dade County, while Ward & West say that it forms "mats on landward surface of coastal dunes 100 yards from the ocean" in Flagler County. Young found it growing "abundantly 200 feet from the ocean". The specific epithet is sometimes written with a capital initial letter for no valid reason.

Blazic describes the plant as "a native verbena brightening the landscape at edge of woods even in winter". Sheehan says "it grows in prairies and pinelands, used as an antidote [by the Seminole Indians] for the bite of the water-moccasin; a tea is made from the flowers and drunk hot." Harris records the species from Lake [Eldorado] and Saint Johns Counties [Matanzas], as well as from Mosquito Inlet, Volusia County. The specimens used by him (1934) in his study of the physico-chemical properties of the sap came from a sandy ocean beach near the Inside Route Canal at Hallendale, Broward County.

Herbarium material of this species has been misidentified and distributed under the names Verbena aubletia L., V. tampensis Nash, Glandularia tampensis (Nash) Small, and even Phlox amplifolia Britt. in the Polemoniaceae. The B. H. Patterson s.n. [Daytona, Nov. 28, 1917] cited below has its upper leaves much like those seen in V. tampensis or some forms of V. canadensis (L.) Britton.

The species is apparently closely related to the widespread and extremely polymorphic V. canadensis of inland portions of the United States, which occurs in the more northern counties of Florida. The ranges of the two species overlap in Brevard, Flagler, and Volusia Counties, where intermediate, probably hybrid, specimens have been found.

The species was apparently first collected and recognized as distinct by A. H. Curtiss, who gathered it on "sand ridges border-

ing the ocean [near Cape Canaveral], E. Florida, July [1879]" and distributed it under the name "Verbena Aubletia var. maritima". This name he published on the printed labels of his first distribution of North American plants (no. 1963) and in the advertising leaflet concerning it, but failed ever to validate it by a formal description. A note on Curtiss 1963* in the United States National Herbarium says "not V. aubletia (G. V. N[ash]), belongs to § Nobiles. Anther connective not appendaged; corolla lobes emarginate." Actually, Curtiss 1963 is a mixture -- the part from "sandy ridges bordering the ocean, eastern Florida" is V. maritima, but the part from "roadsides near Charleston" is V. bonariensis L., while the part from "low open woods, Indian River, June" is V. tampensis Nash.

Because of its showy inflorescences and long blooming season, it seems probable that this species would prove itself a valuable horticultural subject, especially in seaside gardens in subtropical and tropical regions, along the coasts of Florida and our other Gulf States, and southern California.

Perry (1933) records the following 8 additional specimens not as yet seen by me: FLORIDA: Brevard Co.: Curtiss 1963* (E, G), 5706 (E, G); O'Neill 6309 (E, W). Dade Co.: N. L. Britton 220 (F). Martin Co.: Randolph 52 (G). She says "This native of the sand dunes and the hammocks of Florida resembles V. canadensis in inflorescence, but is readily distinguished by the creeping habit and the cuneate or orbicular-ovate leaves."

In all, 177 herbarium specimens, including type material of all the names involved, and 1 mounted clipping have been examined by me.

Citations: FLORIDA: Brevard Co.: F. S. Blanton 6309 (I, N, S, W--1485467), 6479 (I); A. B. Burgess 638 (N); Curtiss 1963* [sandy ridges bordering the ocean, eastern Florida] (Bc, C, Gm, I, Pa, Up--17083, Vt, W--71940, W--1323048), 5706 (Al, Ca--104865, Dt, Fc, Fl--20986, Io--38761, N, Po--64649, Ur, Vt, W--280798); O. Degener s.n. [Tropic, Aug. 15, 1933] (Ba); Hotchkiss s.n. [Feb. 5, 1935] (N); McFarlin 3871 (Gg--237853), 6608 (N); O'Neill s.n. [June 11, 1929] (I), s.n. [July 8, 1929] (I), s.n. [south of Cocoa Beach, August 9, 1929] (Fl--20976, I, W--1488546); W. H. Rhoades s.n. [Cocoa, 12-8-27] (Fl--20993); P. O. Schallert 20869, in part [Cocoa Beach] (Hi--55688, S, Ur); U. C. Smith s.n. [Georgiana, Jany. 31, '91] (Up--17078). Broward Co.: C. C. Deam 60837 (Dm, N); J. P. Young 737 (W--1240563). Collier Co.: Hawkins s.n. [Royal Palm State Park, 1-25-28] (Fl--20990); Sheehan s.n. [Godden's Mission, March 7, 1919] (N), s.n. [Leaning Oak, 16 miles east of Immokalee] (N); J. K. Small 8123 (Ca--796994). Dade Co.: Atwater M.225 (Hi--167652); Bailey & Bailey 6278 (Ba, Ba), 6388 (Ba); Blazic s.n. [Miami, Jan. 1922] (Gg--31409); N. L.

Britton 220 (N), 296 (N); Buswell s.n. [April 3, 1942] (Bu); C. C. Deam 60417 (Dm, N), 60940 (Dm, N); A. A. Eaton 546 (Rf); A. P. Garber s.n. [Miami, May 1877] (Vt), s.n. [Miami, July 1877] (Pa); Henderson s.n. [Cape Florida] (T); Herb. Columbia Univ. s.n. [Cape Fla.] (C); Hunnewell 5835 (Ua--36988); B. McAllister 27 (H-41472); H. N. Moldenke 549 (E, Go, N, S, Up, Ur, W--1567364), 586 (E, Go, H--5474, N, N, Ob--83132, S, Up, Ur); Mulvania 12 (Hp); O'Neill 7596 (Bt--17155, Du--255707, En, Gg--237852, Gg--238205, Hp, Hp, I, N, N, St--9251, Um--23, Ur, W--1601781), s.n. [Jan. 30, 1933] (I); B. H. Patterson s.n. [Feb. 7, 1918] (Cm, Cm); Safford & Mosier 210 (W--1036050); J. K. Small 2100 (N), 8123 (N), 8594 (N), 8599 (N), 8636 (Gg--316099), s.n. [beach opposite Miami, November 1904] (Ur); Small & Carter 1077 (It--isotype, N--type), 2994 (N), s.n. [January 16, 1909] (We); Small, Carter, & Small 3311 (N), s.n. [February 1911] (H--43154, Pl--131514); Small & Small 5422 (Fl--27706, N, S, W--1737919), s.n. [July 9, 1915] (N); Small & Wilson 1961 (N), s.n. [May 6th to 9th, 1904] (Vi); Weber & Hawkins s.n. [Homestead, 3-1-28] (Fl). Flagler Co.: O'Neill s.n. [August 7, 1929] (I); J. K. Small 10372 (Hi--7424); Ward & West 1342 (Hi--182203); West & Arnold s.n. [Flagler Beach, 10/10/40] (Fl--32757). Indian River Co.: R. J. Lemaire 189 (Hi--120562); P. O. Schallert 20869, in part [Vero Beach] (B, Ur, Ws); Small, DeWinkeler, & Mosier 11123 (N), s.n. [April 3, 1924] (It, Mi). Lee Co.: J. K. Small 8347 (N). Palm Beach Co.: Bailey & Bailey 6523 (Ba, Ba); A. B. Burgess 783 (N); W. B. Fox s.n. [Delray Beach, Apr. 28, 1945] (No--15822, We); W. H. Rhoades 6 (W--1534806), s.n. [near Palm Beach] (Hs, Hs); J. K. Small 2124 (N), 8509 (Go, Io--145163, It, N); Small, Mosier, & DeWinkeler 10891 (S, Up); E. West s.n. [Jupiter, 5-12-33] (Fl--20979). Polk Co.: McFarlin 4186 (Mi). Saint Lucie Co.: Brass 20397 (W--2066056); A. B. Burgess 713 (N); H. N. Moldenke 21482 (Bs, Hk, Mm, Ok, Sm, Ss, Z). Seminole Co.: P. O. Schallert 1246 (Je--7022). Volusia Co.: H. C. Beardslee s.n. [New Smyrna, Feb. 1925] (Ob--97288); B. H. Patterson s.n. [Daytona, Nov. 28, 1917] (Cm); J. K. Small 8674 (N); Small & DeWinkeler 9856 (Mi). Biscayne Key: Lightfoot s.n. [Key Biscayne, Apr. 28, 1917] (Ba). Jupiter Island [Martin & Palm Beach Counties]: Cooley, West, & Daggy 4817 (Hi--193302); Small & DeWinkeler 9865 (W--1924334). Merritt's Island: Hotchkiss s.n. [Feb. 5, 1935] (W--1683053); McFarlin 3871 (Mi); H. N. Moldenke 219a (N, Up, Ur). County undetermined: Curtiss s.n. [Fla.] (C); Herb. LeRoy s.n. [Fla.] (C); C. H. Hitchcock s.n. [Oak Lodge] (Dt); "W. M. R." s.n. [Febr. 18, '53] (Pr). MOUNTED CLIPPINGS: Bull. N. Y. Bot. Gard. 3: 436. 1905 (W).

VERBENA MARRUBIOIDES Cham., Linnaea 7: 269. 1832.

Synonymy: Verbena chamaedrifolia var. melindroides Benth. ex Moldenke, Alph. List Invalid Names Suppl. 1: 23, in syn. 1947 [not V. chamaedrifolia var. melindroides (Cham.) Schau., 1940, nor Schau., 1947]. Verbena humifusa var. reticulata Moldenke, Phytologia 2: 423. 1948. Verbena humifusa var. verticillata Moldenke ex Stellfeld, Trib. Farmac. 19 (10): 166. 1951.

Bibliography: Cham., Linnaea 7: 269. 1832; Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 602. 1843; Walp., Repert. Bot. Syst. 4: 27. 1845; Schau. in A. DC., Prodr. 11: 538. 1847; Schau. in Mart., Fl. Bras. 9: 184. 1851; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 147. 1894; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1179. 1895; Herter, Florul. Urug. 105. 1930; Herter, Revist. Sudam. Bot. 6: 97. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 35, 39, 41, 44, & 101. 1942; Augusto, Fl. Rio Grande do Sul 209 & 232. 1946; Moldenke, Alph. List Cit. 1: 83, 96, & 251 (1946) and 2: 358, 442, 458, 532, 533, 537, & 599. 1948; Moldenke, Castanea 13: 117--119. 1948; Moldenke, Phytologia 2: 423 (1948) and 3: 75. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 73, 94, 100, 106, & 198. 1949; Moldenke, Alph. List Cit. 3: 673, 676, 688, 745, 780, 837, 840, 873, 921, 922, & 923 (1949) and 4: 1010, 1090, & 1250. 1949; Stellfeld, Trib. Farmac. 19 (10): 166 & 167. 1951; Rambo, Sellowia 6: 60, 84, & 153. 1954; Angely, Fl. Paran. 7: 13. 1957; Moldenke, Résumé 85, 110, 119, 127, 361, 366, & 472. 1959; Angely, Fl. Paran. 16: 78 (1960) and 17: 46. 1961; Reitz, Sellowia 13 (13): 110. 1961; Moldenke, Résumé Suppl. 3: 15 & 38. 1962; Moldenke, Phytologia 9: 128, 289, 304, 305, 315, & 367. 1963.

Creeping herb; stems cespitose, tetragonal or rather terete, to about 43 cm. long, mostly simple, ascending, villous-hirsute; leaves subsessile or sessile, more or less approximate, variable in size, mostly longer than the internodes, with a subcanescent aspect; petioles, when present, very short and winged; leaf-blades chartaceous, cuneate-obovate or obovate to elliptic or suborbicular, 0.7--3 cm. long, 0.6--1.5 cm. wide, usually acute or subacute at the apex, obtuse or rounded on smaller leaves, coarsely dentate or crenate-serrate from the widest part to the apex with acute or obtuse rather regular teeth, not lobed, cuneate or sub acuminate and entire toward the base, narrowed into a very short winged petiole or subsessile, subrevolute along the margins, lineate-rugose, pustulate-bullate and strigose-hirtous above with white appressed antrorse hairs, canescent-tomentose beneath, strigose to rather densely spreading-hirsutulous or sub-sericeous-hirsutulous on the venation beneath, the midrib, secondaries, and veinlet reticulation deeply impressed above and very uniformly prominent beneath; spikes terminal, solitary, often 10 or more per plant, 5--7.5 cm. long, finally elongate and to 30 cm. long; bractlets subulate-lanceolate, half as long as the calyx, ciliate-margined; flowers patulous, subopposite, paired but at least the lower ones alternately separated; calyx tubular, about 10 mm. long, venose, canescent-hirtous and sub-

glandulose, often colored, the veins broad and prominent, the teeth somewhat unequal, narrowly subulate, connivent but scarcely twisted after anthesis, the indument unequally dense, soft to the touch, almost shiny in aspect, with glanduliferous hairs interspersed; corolla violet or bluish-violet to magenta or rose-purple, pubescent or glabrous on the outer surface, villous within, barbate in the throat, its tube slightly and gradually ampliate upwards, three times as long as the calyx, the limb broad, 5-fid, the lobes rounded, undulate, emarginate at the apex; stamens and style equaling or slightly surpassing the calyx; fruit as in V. platensis Spreng.

The species was based on a Sellow collection from Brazil, deposited in the herbarium of the Botanisches Museum in Berlin, where it was photographed by Macbride under his photograph no. 17429, but is now destroyed. Schauer (1851) says "in campis Brasiliæ meridionalis; in campo d'Utra aliisque in locis legit. Sellow". The type of V. humifusa var. reticulata was collected by Per Karl Hjalmar Dusén (no. 15714) in a campo between Lago and Desiro Ribas, at an altitude of 800 meters, Paraná, Brazil, on October 22, 1914, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. Briquet (1894) places the species in Section Verbenaca, Subsection Nobiles. The names V. chamaedrifolia var. melindroides Schau. and (Cham.) Schau. are synonyms of V. peruviana (L.) Britton.

Verbena marrubioïdes has been collected in campos, rocky sunny dry campos, and dry grassy campos, in fields, in pedregal, and in dry riverbeds, at altitudes of 50 to 800 meters, flowering from August to November and in January. Herbarium specimens have been misidentified and distributed under the names V. erinoides L., V. hirta Spreng., V. humifusa Cham., and V. melindroides Cham. On the other hand, the Herter 1000 [Herb. Herter 82763] distributed as V. marrubioïdes, is actually xV. osteni Moldenke. The records of V. marrubioïdes from Catamarca and Jujuy, Argentina, given by me in previous publications are based on misidentifications of specimens which prove to be V. incisa Hook. and V. peruviana (L.) Britton.

Schauer (1851) comments "Variat praeter magnitudinem foliorum etiam crenis serraturisve latioribus magisque rotundatis et angustioribus subacutis, dein indumento modo magis patente hirsute, modo magis appresso molli subsericeo. Differt a V. scordioide, cui proxima: foliis basi triangulari cuneata integerrima sessilibus antice tantum serratis, spicis demum subdissitifloris patentibus, calyce dentibus tenuoribus longioribusque, corolla tube longe breviori."

The species differs from V. humifusa in having its leaf-blades varying from elliptic to obovate or suborbicular, 0.7—3 cm. long, 0.6—1.5 cm. wide, usually acute at the apex, cuneate or subacute at the base, coarsely dentate from the widest part to the apex with acute or obtuse rather regular teeth, not lobed, pustu-

late-bullate above and rather abundantly hairy with white appressed antrorse hairs, rather densely spreading-hirsutulous on the venation beneath, the midrib, secondaries, and veinlet reticulation deeply impressed above and very uniformly prominent beneath.

Henz collected the species in a region of 1.5 meters rainfall and 5--40° C. temperature range. Osten says for his no. 3133: "aff. teucrioides sed fl. violaceis; cf. humifusa? differt a diagnosi in DC XI 538 caulibus tetragonis nec teretiusculis, calyce glandulosu (nec subglanduloso), corolla extus glabra nec pubescens." Beetle describes our plant as a "vine creeping on ground". The original publication of this species is given as page "266" in error by Jackson (1895).

In all, 44 herbarium specimens, including the type collections of all the names involved, and 11 mounted photographs have been examined by me.

Citations: BRAZIL: Paraná: Ceccatto 237 [Herb. Mus. Paran. 3333] (N); Collector undesignated s.n. [Campos Gerais, 1874] (Ja--46604), s.n. [Campos Geraes] (Ja--46605), s.n. (Ja--46597); Dusén 15714 (Ca--533216, F--photo, N, N--photo, S, Si--photo, W--1181769, Z--photo); Gurgel s.n. [Herb. Jard. Bot. Rio Jan. 37539] (N); Hatschbach 1033 (N), 2010 (N), 2582 (N); Tessmann s.n. [Herb. Mus. Paran. 2525] (N). Rio Grande do Sul: Beetle 1943 (W--2113887); Collector undesignated s.n. [1874] (Ja--46600); Henz 32539 (S); Herter s.n. [Herb. Osten 20413] (Ug); C. Jürgens 20 (B, Ja--17763), 119 (B); Moldenke & Moldenke 19675 (Es, F, Lg, Mg, Mr, N, No, Ot, S, Sm, Ss); Rambo 27293 (N, S), 37698 (N), 43689 (Go), 57297 (S); Vianna 101 [Herb. Jard. Bot. Rio Jan. 46168] (N). São Paulo: Lund s.n. [Taubaté] (Cp). State undetermined: Raben 523, in part [Brasilia] (Br); Sellow s.n. [Bras. merid.]; Macbride photos 17429] (Br--isotype, F--photo of isotype, Kr--photo of isotype, N--photo of type, N--photo of type, N--photo of isotype, Si--photo of isotype, Z--photo of isotype). URUGUAY: Arechavaleta 20 (Ug); Osten 3133 (Ug); Sellow 2800 (Vt). ARGENTINA: Córdoba: Hieronymus 7558 (Br).

xVERBENA MATRITENSIS Moldenke, Phytologia 2: 240. 1947.

Synonymy: Verbena carolina L. x V. hastata L. ex Moldenke, Alph. List Invalid Names Suppl. 1: 23, in syn. 1947. Verbena hastata L. x V. carolina L. ex Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947.

Bibliography: Moldenke, Phytologia 2: 240 & 348. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 23 & 24. 1947; Moldenke, Alph. List Cit. 2: 360. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 164 & 198. 1949; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2209 & 2211. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 263. 1953; Moldenke, Am. Midl. Nat. 59: 354. 1958; Moldenke, Résumé 223, 361, 365, & 473. 1959; Moldenke, Phytologia 8: 121 (1961), 8: 489 (1963), and 9: 219. 1963.

Apparently a natural or artificial hybrid between V. carolina L. and V. hastata L., exhibiting more or less intermediate characters; stems tetragonal, rather densely hirsutulous with whitish and stiff spreading hairs; leaves lanceolate, thin-chartaceous, 4.5-7 cm. long, 1.4-2.4 cm. wide, sharply acute at the apex, cuneate-acuminate at the base, irregularly dentate or incised-dentate along the margins from almost the base to the apex, stribose-scabrous above, strigillose-scabrellous beneath; inflorescence paniculate, or 1 or 2 spikes terminating short lateral branches; spikes narrow, elongate, to about 7 cm. long, rather densely flowered, apparently not setting seed, the short peduncles and slender rachis puberulent with appressed gray hairs; bractlets lanceolate, about 2 mm. long, acuminate at the apex, glabrate on the back, sparsely ciliolate along the margins at the widest part; calyx strigillose, slightly exceeding the subtending bractlets; corolla-tube about 4 mm. long, its limb about 2 mm. wide.

The type of this hybrid, and the only specimen of it known to me, was collected from a presumably cultivated plant growing in the Royal Botanical Garden at Madrid, Spain, and deposited in the Britton Herbarium at the New York Botanical Garden. It very closely resembles xV. engelmannii Moldenke, but differs in having rather densely hirsutulous stems, with stiff, whitish, spreading hairs, whereas xV. engelmannii has its stems merely appressed-pilosulous or puberulent. Only the type specimen and 3 mounted photographs have been examined by me.

Citations: CULTIVATED: Spain: Herb. Hort. Reg. Matrit. s.n. (F—photo of type, N—type, N—photo of type, Z—photo of type).

VERBENA MEGAPOTAMICA Spreng., Syst. Veg., Cur. Post, 4 (2): 230--231. 1827.

Synonymy: Verbena phlogiflora var. α Cham., Linnaea 7: 266. 1832. Verbena phlogiflora α glabra Walp., Repert. Bot. Syst. 4: 26. 1845. Verbena phlogiflora β mucilenta Schau. in A. DC., Prodr. 11: 538. 1847. Verbena phlogiflora var. macilenta Schau. apud Briq., Ann. Conserv. & Jard. Bot. Genèv. 7-8: 238, in syn. 1904. Verbena phlogiflora var. mucilenta Schau. ex Moldenke, Suppl. List Invalid Names 9, in syn. 1941. Verbena megopotamica Spreng. ex Moldenke, Alph. List Invalid Names 58, in syn. 1942. Glandularia megapotanica (Spreng.) Cabrera & Dawson, Rev. Mus. La Plata, ser. 2, Bot. 5: 357. 1944. Glandularia megapotamica (Spreng.) Cabrera & Dawson, Rev. Mus. La Plata, ser. 2, Bot. 5: 381. 1944. Verbena megopotomica Spreng. ex Moldenke, Alph. List Cit. 3: 920, sphalm. 1949.

Bibliography: Spreng., Syst. Veg., Cur. Post, 4 (2): 230--231. 1827; Cham., Linnaea 7: 266. 1832; Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 605. 1843; Walp., Repert. Bot. Syst. 4: 26 & 32. 1845; Schau. in A. DC., Prodr. 11: 538 & 555. 1847; Morong, Britton, & Vail, Ann. N. Y. Acad. Sci. 7: 197. 1892; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1179. 1895; Kunt-

ze, Rev. Gen. Pl. 3 (2): 256. 1898; Briq., Ann. Conserv. & Jard. Bot. Genèv. 7-8: 288-291 [Verb. Balans. Parag. 1-4]. 1904; Briq., Arkiv Bot. Stockh. 2 (10): 7. 1904; Briq. in Chod. & Hassler, Plant. Hassler. 10: 477. 1904; Herter, Revist. Sudam. Bot. 4: 186. 1937; Moldenke, Suppl. List Invalid Names 9. 1941; Moldenke, Alph. List Invalid Names 48, 49, & 58. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39, 41, 44, & 101. 1942; Cabrera & Dawson, Rev. Mus. La Plata, ser. 2, Bot. 5: 357 & 381. 1944; Cabrera, Bol. Soc. Argent. Bot. 1: 67. 1945; Schnack & Covas, Revist. Argent. Agron. 12: 222, 223, & 225-229, fig. 1 C, 2, & 3 E-G, pl. 12, A, B, E, & H. 1945; Moldenke, Holmbergia 4: 151. 1945; Schnack & Gonzalez, Rev. Argent. Agron. 12: 285, 286 (fig. 1 C-E & G), 287 (fig. 2 F-J), 288, & pl. 15 A & E. 1945; Moldenke, Alph. List Cit. 1: 26, 83-85, & 282. 1946; Augusto, Fl. Rio Grande do Sul 209, 210, & 232, fig. 95. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 10 & 25. 1947; Moldenke, Phytologia 2: 337. 1947; Moldenke, Castanea 13: 117. 1948; Moldenke, Alph. List Cit. 2: 368, 580, & 641 (1948), 3: 688, 798, 840, 920, 922, & 923 (1949), and 4: 1231. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 94, 99, 100, 106, & 198. 1949; Cabrera, Lilloa 20: cuadro XVII. 1949; Moldenke, Phytologia 3: 289 (1950) and 3: 468. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 101. 1953; Moldenke, Phytologia 5: 133. 1955; Rambo, Sellowia 7: 260. 1956; Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Am. Midl. Nat. 59: 361-363 & 370. 1958; Moldenke, Résumé 110, 118, 119, 127, 223, 296, 369, 372, 420, 421, & 472. 1959; Moldenke, Résumé Suppl. 2: 12 & 13. 1960; Angely, Fl. Paran. 16: 78 (1960) and 17: 46. 1961; Moldenke, Phytologia 8: 121 (1961), 9: 178, 362, 365-367, 387, & 388. 1963.

Illustrations: Schnack & Covas, Revist. Argent. Agron. 12: 225, fig. 1 C, 226, fig. 2, 227, fig. 3 E-G, & pl. 12 A, B, E, & H. 1945; Augusto, Fl. Rio Grande do Sul fig. 95. 1946.

Rather tall, subshrubby, branching, perennial herb, 1 m. or more tall, almost smooth, the strigose pubescence very tenuous, short, and sparse, not at all or at least not conspicuously visible to the naked eye; stems herbaceous, erect, hollow, much branched, rather sharply tetragonal, inconspicuously pubescent to very shortly and obscurely retrorsely puberulent-strigillose or subglabrescent; branches similar but more slender, widely divergent; nodes plainly annulate; principal internodes 4.5-10 cm. long; leaves numerous, decussate-opposite; petioles slender, 5-15 mm. long, minutely and obscurely antrorsely strigillose to subglabrous or subglabrescent, margined; leaf-blades thin-chartaceous or submembranous, dark-green above, lighter beneath, lanceolate or oblong-lanceolate, 3-7.5 cm. long, 1-3 cm. wide, acute or subacute at the apex, cuneate or cuneately narrowed at the base into the petiole, rather irregularly serrate with broad rather rounded or slightly apiculate teeth along the margins from the widest part to the apex, rather sparsely and obscurely strigillose with brownish antrorse hairs on both surfaces or subglabrescent; inflorescence axillary and terminal at the tips of the branches, capitate, long-pedunculate, densely many-flowered, ap-

parently not elongating after anthesis, simple, ternate, or cymose-panicle with 1 or 2 subsessile lateral ones at the base; peduncles slender, tetragonal, 2--6.5 cm. long, retrorsely strigillose; the lower pair of flowers separated from the rest; bracts ovate-lanceolate, minute or very short, about 4 mm. long, very obscurely strigillose, acute at the apex, much shorter than or to 1/3 as long as the calyx, ciliate; calyx tubular, elongate, about 10 mm. long, glabrous or subglabrescent to very minutely and obscurely antrorsely strigillose with closely appressed brownish hairs, 5-apiculate at the apex, occasionally with rather numerous sessile blackish round glands; corolla hypocrateriform, blue or violet to lilac or rose, its tube slightly exserted, subglabrate on the outside, the limb about 10 mm. wide.

The type of this much misunderstood species was collected by Friedrich Sellow (no. 13), probably in Rio Grande do Sul, Brazil, and was deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his photograph no. 17438 (in part), but is now destroyed. The type of Chamisso's V. phlogiflora var. α is an unnumbered Sellow collection from "Brasilia meridionali", also originally deposited in Berlin, photographed by Macbride under his photograph 17438 (in part), and now destroyed, as is also the type of Walpers' var. glabra. Schauer's var. mucilenta is merely a new name for Chamisso's unnamed variety. Schauer says of it "Hab. in Brasiliae prov. Rio Grande do Sul". Walpers (1845) placed Sprengel's V. megapotamica in his list of doubtful species, but unwittingly described the same taxon well as V. phlogiflora & glabra. Jackson (1895) reduced Sprengel's name to synonymy under V. phlogiflora Cham., while Cabrera & Dawson (1944) do just the reverse, reducing V. phlogiflora to synonymy under V. megapotamica. They describe the species as "Hierba perenne, erecta, con hojas lanceolado-ovadas, pecioladas, profundamente aserrado-crenadas, y flores azules dis-uestas en espigas cortas, capituliformes. Es una especie de inflorescencia llamativa que algunas veces se encuentra en cultivo. Habita en el sur del Brasil, Uruguay, Paraguay y nordeste de la República Argentina hasta el Río de la Plata. En Punta Lara es un elemento frecuente en las abras."

The species has been found in hedgerows and wet thickets, on campos, and along riverbanks, from 900 to 1650 meters altitude, flowering in October, November, and January to March. Rambo encountered it in a region of 2 meters rainfall and 0—25° C. temperature variation. Cabrera reports it from "sobre terreno mojado en un claro del bosque".

Herbarium specimens of this plant have been misidentified and distributed under the names V. megapotamica var. tweediana Kuntze, V. peruviana (L.) Britton, V. phlogiflora Cham., "V. aff. venosa Gill. & Hook.", and even Lantana sp. On the other hand, the Fiebrig 5699 distributed as V. megapotamica is actually V. kuntzeana Moldenke; Sehnem 3776 is V. lobata var. hirsuta Moldenke; Venturi

5397 is the type collection of V. moricolor Moldenke; and Cabrera & Corte 9610, Kuntze s.n. [Contendas, Dec. '92], and Vattuone & Bianchi 60 are V. phlogiflora Cham. Parodi 12250 closely resembles V. phlogiflora. Morong, Britton, & Vail (1892) cite Balansa 1024 as V. peruviana (L.) Britton, which it certainly is not!

Verbena megapotamica is in general extremely similar to V. phlogiflora. Sprengel's original description (1827) is merely "caule herbaceo erecto pubescente, foliis petiolatis oblongo-lanceolatis serratis basi cuneatis glabriusculis, capitulis terminalibus, bracteis minutis ciliatis, calyce elongato glabro." Walpers (1845) characterizes the taxon well when he describes it as "fere laevis, strigis tenuibus brevibus, oculo nudo vix conspicuis; spicis capitatis, unico florum pari inferiori remotiusculo; bracteolis nunc minimis, nunc tertiae circiter calycis longitudinis." Schauer (1847) also distinguishes it well from V. phlogiflora when he says "major, pube strigosa tenuissimâ rarâque adspectu glabra, caulis herbaceis fistulosis ramosissimis erectis, spicis ad apices ramorum saepe ternis longe pedunculatis simplicibus vel uno alterove pari ad basin primariae subsessilis accidente cymoso-paniculatis." Archavaleta 27 bears a notation "pistilos largos escotados en el extremidad".

The hybrid of V. megapotamica with V. peruviana (L.) Britton is xV. schnackii Moldenke, that with V. santiaguensis (Covas & Schnack) Moldenke is xV. vaga Moldenke, and that with V. tenuisecta Briq. is xV. transitoria Moldenke.

It should be noted here that V. megapotamica hybrida Osten is actually V. kuntzeana Moldenke; V. megapotamica f. truncatula Briq. and var. truncatula Briq. are V. incisa Hook.; V. megapotamica var. pinnatiloba Kuntze and var. tweediana f. pinnatiloba Kuntze are V. pinnatiloba (Kuntze) Moldenke; and V. megapotamica var. phlogiflora (Cham.) Kuntze, var. tweediana Kuntze, var. tweediana (Niven) Kuntze, and var. tweedieana Kuntze are all V. phlogiflora Cham.

Kuntze (1898) says of V. megapotamica: "Schauer citirt zu dieser Art, von den ich Sprengel'sche und Chamisso'sche Originale vergleichten konnte, noch V. cunha (err. cunea) Vell. [1825 descr. 17] aber Calyx 5-dentatus dentibus acutis passt nicht, weder nach der Beschreibung noch nach der Abbildung tab. 41, denn die Kelchzähne sind ungleich, davon zwei mindesten pfriemlich."

Briquet (1904) has a lot to say about this species, but unfortunately confuses it with V. incisa Hook. He says "Le V. megapotamica de doit pas être confondu avec diverses espèces voisines très souvent mêlées avec lui dans les herbiers. Il est caractérisé par ses tiges dressées, assez robustes, rameuses à rameaux ascendants, ses feuilles ovées-oblongues, oblongues ou oblongues-lancéolées, toutes très nettement pétiolées, à base du limbe atténue ou même tronquée-subcordée, à marges assez fortement incisées-crénelées. Les fleurs sont groupées en épis très courts,

le plus souvent même réduits à dans capitules, a calices sessiles, rapprochées au sommet du pédoncule de façon à former un hémisphère. Le calice est longuement tubuleux, presque siphone, couvert d'un indument apprimé très dense, à glandes rares de dépassant pas ou dépassant de bien peu les poils courts (longueur moyenne 1,2--1,5 cm.); ses dents inégales sont brièvement acuminées-subulées, les postérieures longues de 0,5--0,8 mm. les antérieures atteignant 1--1,2 mm. La corolle, très grande possède un tube exsert et un limbe atteignant 1--1,8 cm. de diamètre. Les nos. 1024 et 1024b sont très typiques. Le no. 1024c appartient à une forme un peu différente (var. truncatula Briq. herb.), à limbe des feuilles plus obtus au sommet et tronqué-subcordé à la base, à nervation plus saillante, à épi un peu plus allongé, à calice légèrement plus court: la corolle possède un tube moins exsert et un limbe de plus faible diamètre. Malgré ces différences, cette forme peut rentrer dans le cycle des variations du V. megapotamica v. Tweediana. Nous avons longtemps hésité à reprendre pour cette espèce le nom de Sprengel, parce que cet auteur attribue au V. megapotamica un calice glabre, ce qui n'est le cas dans aucune des formes de notre espèce. Mais M. O. Kuntze, qui a pu comparer des originaux de Sprengel et du Chamisso, nous apprend (l.c.) qu'il s'agit d'une forme glabrescente et non pas glabre. Nous partageons d'ailleurs tout à fait l'opinion de M. Kuntze lorsqu'il exclut de la synonymie le V. cunha Vell....attendu que cette plante doit posséder des dents calicinales simplement aiguës. A notre avis, la figure grossière de Vellozo ne saurait sans imprudence être assimilée à l'une quelconque des nombreuses espèces affines de ce groupe."

Augusto (1946) cites an Isabelle collection from Rio Grande do Sul, Brazil. In all, 38 herbarium specimens and 6 mounted photographs, representing the type collections of all the names involved, have been examined by me.

Citations: BRAZIL: Paraná: Hatschbach 3365 (Z). Rio Grande do Sul: Rambo 34729 (N, S), 35729 (N); Sellow 13 [Macbride photos 17438, in part] (Kr-photo of type, N--photo of type, N--photo of type). Santa Catarina: Rambo 60153 (S); Reitz 2927 (N); Smith & Klein 7707 [Herb. Barb. Rodr. 22660] (Mm, N), 7765 (Ok), 10448 (Ok); Smith & Reitz 10448 (N, W--2251679); Smith, Reitz, & Klein 7765 (W--2251310). State undetermined: Sellow s.n. [Brasil meridionali; Macbride photos 17438, in part] (Br, Kr--photo, N--photo, N--photo). PARAGUAY: Balansa 1024 (N). URUGUAY: Arechavaleta 27 (Ug, Ug, Ug), 3128 (Ug); Collector undesignated s.n. (Ug); Mrs. O. C. James s.n. [Colonia, Jan. 1909] (Du--149772); Osten 5389 (N, Ug); Teisseire s.n. [Colonia, 1913] (Ug--446). ARGENTINA: Buenos Aires: G. Atkinson 16063 (N); Burkart 3122 [Herb. Osten 20940] (Ug); Cabrera 1584 (N, Sp--24564), 1618 (N), 3401 (Bt--43217, N, Sp--38947), 5378 (Ca--882789, N, N); Lefebvre s.n. [Isla Santiago, 1893] (Br); Parodi 12250 (N); Pastore &

Troncoso 983 (Ug--8129).

VERBENA MENDOCINA R. A. Phil., Anal. Univ. Chil. 35: 191. 1870.

Synonymy: Glandularia mendocina (Phil.) Covas & Schnack, Rev. Argent. Agron. 11: 96. 1944.

Bibliography: R. A. Phil., Anal. Univ. Chil. 35: 191. 1870; R. A. Phil., Sert. Mendoc. Alt. 33. 1870; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1179. 1895; R. A. Phil., Anal. Univ. Chil. 90: 609. 1896; Durand & Jacks., Ind. Kew. Suppl. 1: 451. 1906; Reiche, Fl. Chile 5: 295 & 463. 1910; Sanzin, Anal. Soc. Cientif. Argent. 88: 129—131. 1919; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 44 & 101. 1942; Moldenke in Lundell, Fl. Texas 3 (1): 41. 1942; Beetle, Bot. Review 9: 674. 1943; Covas & Schnack, Rev. Argent. Agron. 11: 96 & 97. 1944; Schnack & Covas, Darwiniana 7: 71, 72, 74, & 75, pl. 1B. 1945; Covas & Schnack, Darwiniana 7: 86. 1945; Moldenke, Phytologia 2: 348. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 10. 1947; Moldenke, Castanea 13: 119. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 106, 164, & 198. 1949; Moldenke, Alph. List Cit. 3: 688, 748, 770, & 813 (1949) and 4: 1162 & 1249. 1949; Moldenke, Phytologia 3: 141 (1949) and 3: 289 & 290. 1950; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2209 & 2211. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 101. 1953; Moldenke, Am. Midl. Nat. 59: 356. 1958; Moldenke, Résumé 119, 127, 224, 296, & 472. 1959; Moldenke, Phytologia 8: 123 (1961) and 8: 396. 1962; Moldenke, Résumé Suppl. 5: 7 & 8. 1962; Moldenke, Phytologia 9: 394 & 400. 1963.

Illustrations: Schnack & Covas, Darwiniana 7: pl. 1B. 1945.

Annual herb, softly appressed-pilose or persistently whitish-strigose throughout; stems erect, sturdy, simple or branched, to 30 cm. long; leaves decussate-opposite, ovate-triangular in outline, about 4 cm. long and 2.4 cm. wide, variable in form, sometimes trifid or tripartite, sometimes pinnatifid or pinnatipartite with 5-parted lobules, cuneately narrowed at the base into the petiole, the lobules about 3 mm. wide; spikes pedunculate, subterminal, finally greatly elongate; bractlets lanceolate, about 5 mm. long, subequaling the calyx; calyx about 6 mm. long, silky or sericeous-pubescent, not glanduliferous; corolla varying from blue or pale-blue to lilac, rose-lilac, or purple, equaling the calyx, its tube about 1 cm. long, glabrous, the limb about 5 mm. wide; anthers not appendaged; pollen 87.5 percent fertile; pistil about 7.8 mm. long; chromosome number: $2n = 10$.

The type of this puzzling species was collected by Rudolf Amundus Philippi at Mendoza, Argentina, in 1868, and is deposited in the herbarium of the Museo Nacional at Santiago, Chile; an isotype in the herbarium of the Botanisches Museum at Berlin was photographed by Macbride as his photograph no. 17430, but is now destroyed.

Covas & Schnack (1945) discuss the relation between the length of the pistil and the volume of the pollen-grains in this species. Beetle (1943), through some clerical error, places this species in the Cruciferae! It was apparently introduced into cultivation in or about 1841, although not described until

29 years later. It has been collected in fields and wet places in fields, at 250 meters altitude, flowering from October to February, April, and August. The only recorded common name is "Mendoza verbena". Herbarium specimens have been misidentified and distributed under the name V. erinoides Lam., but the H. N. Moldenke 18237 distributed as V. mendocina is actually V. tenuisecta Briq.

The species is very similar to V. tenuisecta, but differs in having its leaf-segments broader, oblong, not uniform in diameter, mostly 1 mm. or more wide, the corolla-tube 1 cm. long and its limb 5 mm. wide, the bractlets about 5 mm. long, and the whole plant usually more persistently whitish-strigose throughout. Philippi, in his original description (1870), says "Parece muy vecina a la V. incisa Schauer; que no he visto todavía; pero sus bracteas no son aovadas, i son mucho mayores; no ha glandulas en el cáliz; la corola es azul i no 'roseo purpurascens'; las hojas mucho mas partidas." If my interpretation of the species is correct, it has very little affinity with V. incisa Hook. Sanzin (1919) claims that V. mendocina is intermediate between what he calls V. erinoides and V. erinoides var. glandulifera Sanzin [=V. perakii (Covas & Schnack) Moldenke]. He says "Cerco de la ciudad de Mendoza, y precisamente del lado de la Cordillera a una altura de 1000 y 1200 metros, abunda una variedad (Herb. Sanzin nos. 139, 1700, 3099, 3129, 3130), que lleva glandulas en el cáliz y que tiene las hojas anchas, triangulares, de base cuneada y trifidas o tripartidas con los segmentos casi enteros o con unos lobulitos laterales:

"A typo differt caule, foliis, calicibusque hirsutis, pilis glanduliferis mixtis. Tubo calice subdupo longiore, appendicibus antherarum subexsertis clavatis violaceis. Laciniis foliarum lanceolatis (Osten, in litt.). Más al sur y a las mismas alturas indicadas existe otra variedad que se acerca más al tipo por sus hojas tripartido-pinnatifidas con segmentos angostos, pero que se diferencia esencialmente por sus glandulas estaminales apenas salientes de la garganta del tubo corolar en vez de ser inclusas.

"La V. mendocina Phil. es intermediaria entre estas dos variedades, pues el examen de ejemplares auténticos de Philippi, del museo de Santiago, me permitió constatar que tiene hojas de dos clases, idénticas en la forma a las hojas de las dos variedades citadas. El carácter de los tallos erguidos de la V. mendocina, no es constante, pues en la variedad glandulifera hay individuos erguidos y otros semirastreros. Por todo esto me parece conveniente unir en una sola las dos especies, V. erinoides y V. mendocina."

Covas & Schnack (1944) suggest a possible hybrid between V. mendocina and V. parodii (Covas & Schnack) Moldenke: "Hemos hallado en la localidad del tipo una población formada, muy probablemente, por híbridos (y formas derivadas de éstos) entre esta especie y Glandularia mendocina.....Hemos podido estudiar un

trozo del ejemplar tipo de esta especie (ex Herb. Mus. Nac. Santiago de Chili, PHILIPPI 1868: Iter mendocinum), y evidentemente se trata de una buena especie, distinta a Glandularia laciniata.. y no sinónima como lo admite SANZIN.....(Posee también cinco pares de cromosomas, observados en diacinesis.) La población híbrida presenta una amplia gama de variación que comprende formas intermedias y formas vecinas a ambos padres: en algunas de estas formas hemos podido observar flores con pequeños lóbulos petaloïdes en la base del limbo de la corola, carácter que nunca hemos observado anteriormente en el género Glandularia.....Además hemos observado, en individuos de la población híbrida mencionada, irregularidades en la meiosis (miembros de un par de cromosomas separados en diacinesis, lo cual indica falta de homología en parte del material cromosómica).....En la misma población híbrida hemos encontrado una forma con flores rosadas, color aparentemente debido a un derivado de cianidina." This natural hybrid is discussed herinafter under the name V. perturbata Moldenke.

For a key to distinguish V. mendocina from some of its close allies, see under V. laciniata in these notes.

Philippi apparently used the same specific epithet - "mendocina" - a second time (in 1896) for a different plant collected near Mendoza in October of 1870. He describes it as follows: "V. fruticosa, caule erecto, crasso (4 mm.); ramis virgatis puberulis; foliis glandulosco-puberulis, margine revolutis, laciniis indivisis vel bi-trifidis obtusiusculis; pedunculis longe nudis; spica oblonga; bracteis angustis linearibus, dimidium calycem aequantibus; calice glandulosco-puberulo; corollae glabrae tubo sesquies aequante, limbo parvo. Prope Mendozam Octobri 1870 lecta est. El ejemplar que tengo a la vista, tiene la altura de 34 centímetros, i su tallo en la base el grosor de 4 milímetros, está cubierto de una corteza blanquizca. Sus ramos tienen la lonjitud de 20 centímetros, i constan dolo de 5 a 6 internodios; el pedúnculo tiene 6 a 8 centímetros de largo. Las hojas miden 24 milímetros de largo, las espigas, que tal vez se alargarán mas tarde, tienen la lonjitud de 3 a 3 1/2 centímetros, el cáliz mide 10 milímetros, la corola 15 milímetros. -- Se parece bastante a la V. trachea, pero se distingue fácilmente por su porte, su vellosoidad mui distinta; la corola mas pequeña." What this second species is -- not having seen any type material of it -- I do not as yet know.

In all, 21 herbarium specimens and 7 mounted photographs, including photographs of the type collection, have been examined by me.

Citations: URUGUAY: Berro 7478 (N). ARGENTINA: Buenos Aires: Dusén 6308 (N, S); Rodrigo V. 721 (S); Ruiz Huidobro 1330 (Bm, S). Chaco: Venturi 9780 (N, S). Córdoba: Ruiz Leal 12217 (Rl). Formosa: I. Morel 530 (N, S). La Rioja: Ruiz Leal 16597 (Rl), 17162 (Rl). Mendoza: R. A. Philippi s.n. [1868; Macbride photos 17430] (Kr--photo of isotype, N--photo of isotype, N--photo of isotype);

Semper s.n. [Ruiz Leal 9539] (N). CULTIVATED: New York: Ahles s.n. [N. Y. Bot. Gard. Cult. Pl. 477/45] (N, N). Sweden: Alm s.n. [18.VIII.1947] (S); Herb. Mus. Bot. Stockholm s.n. [Holmiae, 1841] (S); E. Wall 15/742 (EW, EW, F--photo, N, N--photo, Sg--photo, Z--photo).

VERBENA MENTHAEOLIA Benth., Pl. Hartw. 21. 1839.

Synonymy: Verbena setosa Mart. & Gal., Bull. Acad. Brux. 11 (2): 321. 1844. Verbena hintoni Moldenke, Phytologia 1: 439--440. 1940. Verbena setosa Mart. ex Moldenke, Prelim. Alph. List Invalid Names 48, in syn. 1940. Verbena menthaefolia Benth. ex Moldenke, Suppl. List Invalid Names 9, in syn. 1941. Verbena officinalis Wats. ex Jepson, Fl. Calif. 3 (2): 380, in syn. 1943 [not V. officinalis L., 1753]. Verbena hintonii Moldenke, Alph. List Invalid Names Suppl. 1: 24, in syn. 1947. Verbena officinalis var. mediterranea Née ex Moldenke, Alph. List Invalid Names Suppl. 1: 26, in syn. 1947. Verbena magdalensis Moldenke, Résumé Suppl. 3: 40, in syn. 1962.

Bibliography: Benth., Pl. Hartw. 21. 1839; Steud., Nom. Bot., ed. 2, 2: 750. 1841; Mart. & Gal., Bull. Acad. Brux. 11 (2): 321. 1844; Walp., Repert. Bot. Syst. 4: 32 (1845) and 6: 687. 1847; Schau. in A. DC., Prodr. 11: 547 & 555. 1847; Coulte., Contrib. U. S. Nat. Herb. 2: 327. 1894; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1179. 1895; J. K. Small, Fl. Southeast. U. S., ed. 1, 1008 (1903) and ed. 2, 1008. 1913; H. J. Lam, Verbenac. Malay. Arch. 10. 1919; Rydb., Fl. Prairies & Plains 677. 1932; J. K. Small, Man. Southeast. Fl. 1137. 1933; Perry, Ann. Mo. Bot. Gard. 20: 247, 259, 263--265, & 355. 1933; Cory, Texas Agr. Exp. Sta. Bull. 550: 89. 1937; Moldenke, Prelim. Alph. List Invalid Names 48. 1940; Moldenke, Phytologia 1: 439--440 (1940) and 1: 511. 1941; Moldenke, Suppl. List Invalid Names 9. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 13--15, 18, 19, 44, & 101. 1942; Moldenke in Lundell, Fl. Texas 3 (1): 16 & 21. 1942; Moldenke, Alph. List Invalid Names 48 & 50. 1942; H. S. Gentry, Carnegie Inst. Wash. Publ. 527: 222 & 306. 1942; Moldenke, Known Geogr. Distrib. Verbenac. Suppl. 1: 2. 1943; Moldenke, Phytologia 2: 68, 88, & 115. 1945; Moldenke, Castanea 10: 40. 1945; Moldenke, Alph. List Cit. 1: 3, 14, 32, 57, 109, 143, 144, 169, 178, 220, 221, 232, 233, 246, & 261. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 24 & 26. 1947; Moldenke, Phytologia 2: 330 & 348. 1947; Hill & Salisb., Ind. Kew. Suppl. 10: 242. 1947; Moldenke, Castanea 13: 113. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 44 & 64. 1948; Moldenke, Alph. List Cit. 2: 360, 465, 467, 471, 473, 474, 476, 479, 482, 483, 488, 489, 498, 542, 587, 596--598, 604, & 607 (1948) 3: 685, 697, 724, 740, 752, 775, 785, 786, 799, 800, 803, 804, 829, 830, 832, 833, 905, 933, 953, 977, & 978 (1949), and 4: 997, 1081, 1100, 1120, 1126, 1138, 1166, 1169--1172, 1180, 1191, 1199, 1200, 1207, 1208, 1211, 1224, 1225, 1227, 1231, 1236, 1239, 1241, 1243--1245, 1255,

1291, 1295, 1298, & 1303. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 14. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 24, 26, 27, 33, 108, 164, & 198. 1949; Moldenke, Phytologia 3: 73. 1949; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2209 & 2211. 1951; Rzedowski, Anal. Esc. Nac. Cienc. Biol. 8: 105. 1954; Moldenke, Inform. Mold. Set 49 Spec. 3 (1954) and 51 Spec. 4. 1956; Moldenke, Résumé 29, 32, 33, 39, 130, 224, 366, 370, 371, 374, & 472. 1959; Moldenke, Phytologia 8: 143 & 144 (1961) and 8: 279 & 407. 1962; Moldenke, Résumé Suppl. 3: 8, 38, & 40 (1962) and 6: 4 & 11. 1963; Moldenke, Phytologia 8: 471, 487, 488, & 491 (1963) and 9: 39, 40, 78, 156, 165, & 167. 1963.

Annual or perennial herb, varying from nearly prostrate to erect and 1.5 m. tall, slender, branching, often with a spread of 60 cm., sometimes practically leafless; stems decumbent or ascending to erect, very slender, branched, acutely tetragonal, brownish, pilosulous or hispid to more or less short-hirsutulous, sparsely and minutely hispidulous; branches similar to the stems in all respects; nodes annulate; principal internodes 1.5--6 cm. long; leaves decussate-opposite, the upper ones sessile or subsessile, the lower ones tapering at the base into a margined petiole; petioles very short and obscure or obsolete; leaf-blades thin-chartaceous, uniformly green on both surfaces, narrowly lanceolate or elliptic in outline to ovate or obovate-cuneate, 2.5--6 cm. long (the upper ones 1.5--2 cm. long, 2--11 mm. wide) coarsely few-dentate along the margins, deeply cleft or subincised to incised-pinnatifid or else 3-laciniate or 3-lobed below the middle, acute at the apex, cuneate at the base, very rough, more or less short-hirsutulous or strigillose on both surfaces, especially on the venation beneath, somewhat pustulate above, the divisions or segments lanceolate, acute or subacute, entire or remotely serrate-dentate to coarsely dentate or incised; midrib and the 1 or 2 secondaries, very slender, impressed above, prominulous beneath; veinlet reticulation indiscernible on both surfaces; inflorescence axillary and terminal, spicate; spikes terminal, panicled or fasciculate-paniculate, numerous, elongate, 7.5--23 cm. long, slender, many-flowered, dense or else compact only at the apex, scabrous, the flowers densely imbricate before and during anthesis, loosely scattered in fruit; rachis very slender, sparsely pilosulous; peduncles obsolete or extremely short; bractlets small, lanceolate or ovate-lanceolate, acuminate at the apex, variable in length, mostly 1.5--2 mm. long, subequaling or usually shorter than the calyx, ciliate along the margins and sparsely strigillose; flowers minute; calyx 2.5--3 mm. long, strigillose, sparsely (if at all) glandular, its teeth minute; corolla varying from purple, very faint purple, light-purple, deep blue-purple, or pale-pink to blue, pale-blue, light-blue, bright-blue, blue-lavender, lavender-blue, light lavender-blue, lavender, lilac, or whitish-lavender, about 7 mm. long or 3 times as long as the calyx, its tube only slightly longer than the calyx, the limb 4--6 mm. wide, the lobes more or less truncate; fruit remote; cocci trigonous, 2--2.5 mm. long, convex on the back, striate, raised-reticulate above, the commissural faces mur-

icate.

The type of this species was collected by Carl Theodor Hartweg (no. 175) at Leon, Guanajuato, Mexico, in 1839, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The type of V. setosa was collected by Henri Guillaume Galeotti (no. 778) in part in the forests of Moran, near Real del Monte, Hidalgo, Mexico, in 1840, and in part in the forests of Sabino, near Izquiquepan, northern Mexico, at altitudes of 6000 to 7500 feet, probably deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. The name, V. officinalis var. mediterranea, is apparently based on the Collector undesignated 48 [probably collected by Née] deposited in the Brussels herbarium, and V. magdalensis on Carter, Alexander, & Kellogg 2135 in the Dudley Herbarium. The type of V. hintoni was collected by George B. Hinton (no. 11991) -- in whose honor it was named -- on a grassy bank at Zitacuaro-Bosque, district of Zitacuaro, Michoacán, Mexico, on June 28, 1938, and is deposited in the Britton Herbarium at the New York Botanical Garden.

Verbena menthaefolia is a rather puzzling species, very similar to V. officinalis L., from which it may be distinguished by its leaves being densely strigillose on both surfaces and the stems and branches being sparsely and minutely hispidulous throughout. It is native to the southwestern United States and most of Mexico. Common names recorded for it are "bercul", "tel-rán", "verbena", "vervena", and "weyhooli".

Herbarium material of this species has been misidentified and distributed by various workers under the names V. affinis Mart. & Gal., V. bracteata Lag. & Rodr., V. canescens Kunth, V. carolina L., V. ehrenbergiana Schau., V. halei Small, V. littoralis H.B.K., V. littoralis var. affinis (Mart. & Gal.) Bourgeau, V. neomexicana (A. Gray) Small, V. officinale L., V. officinalis L., V. orcuttiana Perry, V. polystachya H.B.K., V. prostrata R. Br., V. recta H.B.K., V. scaberrima Cham., V. scabra Vahl, "V. spuria inedita" [Ruiz & Pavon], V. subuligera Greene, V. teucriifolia Mart. & Gal., V. trifida H.B.K., V. urticaefolia L., and V. xutha Lehm.

On the other hand, the Balls 10065, distributed as V. menthaefolia, is actually V. abramsi Moldenke; G. L. Fisher 44116 and Pringle s.n. [Valley Ortiz, Apr. 11, 1887] are V. halei Small; the Maltby 252 annotated by Perry as "Aff. V. menthaefolia Bth." is V. littoralis H.B.K.; the C. R. Orcutt 1371, similarly annotated by Perry, is V. longifolia Mart. & Gal.; Raven, Mathias, & Turner 12587 is V. neomexicana var. hirtella Perry; Edw. Palmer 1041 is V. neomexicana var. xylopoda Perry; and Edw. Palmer 356 is V. pinetorum Moldenke. Verbena setosa was reduced to synonymy under V. officinalis L. by Schauer (1847).

Verbena menthaefolia has been collected in canyons, rocky canyons, and ravines, along creeks, on hills and foothills, open pine

forests and open pine-oak woods, in beds of intermittent streams among rocks, banks of irrigation ditches, barrancas, mesas, and basaltic mesas, on fields and canyon margins, flats, dry flats, and adobe or grassy flats and banks, in wet meadows and river valley pastures, red clay soil of dense oak forests, in black clayish loam in scrubland, margins of dry pools, along waysides and arroyo margins, on dry ditch banks and steep rocky volcanic outcrops, heavy clay creek bottoms, on exposed vertical rocks, in sandy loam on grassy hillsides, in sandy or heavy alkaline soil, roadside bankings and moist depressions, in low growth and wet pinewoods, in rich moist soil in open woodlands, in marshy ground, arroyos and milpas, in thorn and mesquite forests, in grasslands with scattered pines, on playas and bottomlands, on sandy river banks and canal banks, in clay and limestone soil of mountainsides, in sand, along roadsides and ditches in cornland, moist adobe soil, the edges of fields, and in sandy arroyo margins, at altitudes of 3 to 2930 meters, flowering and fruiting from December to October.

Purer reports finding it "in open valley in partial shade of large shrubs". Gentry (1942) cites his no. 598, but this proves to be V. carolina L. He refers to V. menthaefolia as "A common, weed-like, small-flowered lowland Verbena" found in "arroyo-margins in Short-tree Forest." He also calls it an "annual, growing rather rankly in moist places, occurrence casual" and says that it grows "scattered in cienaga bottomland of grama grasslands". Carter, Alexander, & Kellogg encountered it "among mesquite in broad shallow arroyo bordered with Prosopis juliflora". Wolf describes it as a plant of the Lower Sonoran Zone.

Powell & Edmondson that that it is "abundant in Sinaloa". Smith, Peterson, & Tejeda found it growing in black to gray soils in oak forests giving way to scrubby secondgrowth thickets below. Steyermark avers that in Guatemala the leaves are mashed and drunk raw with water for curing chills and fevers.

Jepson (1943) records the species from Tulare County, California, and cites numerous specimens and literature references. Mueller says that it is "common in less dense oak woods of upper canyon". M. E. Jones s.n. [west of Uvalde, April 26, 1931] is a mixture with V. halei Small; the same collector's no. 28294 was gathered "between Kerrville and San Antonio", and so may have been from Kerr or Bexar Counties in Texas. Moore & Wood 4134 is a mixture with V. canescens H.B.K., while Schery 142 is a mixture with V. teucriifolia Mart. & Gal. The J. Let s.n. [San Diego, Nov. 9] was first identified as V. bracteata, then V. prostrata, while C. T. Mohr s.n. [Huatusca, 1857] was first determined as V. officinalis, then as V. recta, then V. scabra, and then V. canescens by various workers!

Jackson (1895) and Lam (1919) reduce V. menthaefolia to synonymy under V. officinalis L., as Jackson also does V. setosa, while Walpers (1845) lists it among his doubtful species. It is

discussed by Coulter (1894) and by Small (1903, 1913, 1933) under the name V. officinalis. This, however, is a case of misidentification. Cory (1937) cites V. officinalis from the Timber Belt, Coastal Prairies, Rio Grande Plains, and Blackland Prairies of Texas, while Rydberg (1932) also records it from Texas. It is probable that Cory's records, at least, are based partly on V. halei material and partly on material of V. menthaefolia. Wiggins notes for his no. 5508 that the inflorescence is not glandular.

Perry (1933) cites the following 50 additional specimens not as yet seen by me: CALIFORNIA: San Diego Co.: Abrams 3406 (E, G); Carlson s. n. [San Diego, 17 April 1918] (G); Macbride & Payson 781 (G); Edw. Palmer 308 (E); M. F. Spencer 971 (G), 1414 (G); Thurber 555 (G). MEXICO: Baja California: Bartram s.n. [Tia Juana, 1 Feb. 1920] (D); L. Schoenfeldt 2915 (G). Chihuahua: Pringle 1599 (E). Coahuila: Gregg 11 (E), 265 (E, G), 276 (E), 406 (E); Edw. Palmer 191 (E, G), 1042 (D, G). Durango: Nelson 4577 (E); Edw. Palmer 153 (E, F, G). Guanajuato: Duges s.n. [Sirena Mountain, 1894] (G); Hartweg 175 (K-type). Hidalgo: Galeotti 778, in part [Moran] (K); Rose, Painter, & Rose 8753 (G). México: Bourgeau 547 (W); Pringle 8534 (D, E, F, G); Rose, Painter, & Rose 8382 (G). Michoacán: Arsène 2798 (G); Gregg 823 (E). Morelos: Pringle 9529, in part (F). Oaxaca: Pringle 5715 (G); L. C. Smith 27 (G). Querétaro: Arsène & Agniel 10242 (E, F, G). San Luis Potosí: Edw. Palmer 141, in part (E, F, G, W); Parry & Palmer 717 (G). Vera Cruz: Seaton 7 (F, G). She notes that "In the specimens cited from California south including Sinaloa, the inflorescence is more densely strigillose than in the collections from the southern part of Mexico, the calyxes are about 1 mm. longer, with teeth strongly unequal and the subtending bracts often as long as the calyxes. Although this apparently indigenous species has been known generally as V. officinalis, it has somewhat harsher pubescence and is scarcely, if at all, glandular. The fruiting calyx tends to be connivent, concealing the apex of the schizocarp rather than open and disclosing it. Perhaps these are differences only of degree and may be merely variation of V. officinalis; nevertheless, for the present it seems preferable to retain the name V. menthaefolia for the American representative." Her Lyonnet s.n. [Lomas de Santa Fé, July 1928] is probably what is cited hereinafter as Lyonnet 334, and her Gregg 406, also from the New York herbarium, is probably what I cite below as Gregg s. n. [valley of Parras, April 11, '97]. The Edw. Palmer 356 which she cites is regarded by me as V. pinetorum Moldenke.

In all, 310 herbarium specimens, including type material of most of the names involved, and 4 mounted photographs have been examined by me.

Citations: TEXAS: Bexar Co.: M. E. Jones 28294 (Po--187971). Uvalde Co.: M. E. Jones s.n. [west of Uvalde, April 26, 1931]

(Po--187973). ARIZONA: Pinal Co.: Peebles 4224 (Gg--267622). Yuma Co.: M. E. Jones s.n. [north of Yuma, April 26, 1906] (Du--151770, Po--70890, Po--70891). CALIFORNIA: Calaveras Co.: J. T. Howell 30087 (Gg). Riverside Co.: T. S. Brandegee s.n. [Indian Wells, March 28, 1901] (Ca--104836). San Diego Co.: Abrams 3406 (Ca--407326, Dt, Du--24187, Gg--162154, N, Po--4007, Po--156399, W--613970); T. S. Brandegee s.n. [San Diego, June 1894] (Ca--104875); Carlson s.n. [San Diego, April 18, 1918] (Gg--31395); H. P. Chandler 5122 (Du--77580); D. Cleveland 1135 (Sd--6793), s.n. [March, April, May 1874] (Sd--6794), s.n. [San Diego, June 1874] (Sd--6782), s.n. [San Diego, April 21, 1881] (Sd--6795), s.n. [National Ranch, Jan. 20, 1884] (Sd--6784), s.n. [National City, Apr. 20, 1884] (Rs--14592), s.n. [Sweetwater Valley, May 9, 1884] (Rs--14311, Sd--6783); Collector undesignated s.n. (Sd--6791); G. W. Dunn s.n. [24 April 1891] (Ca--25151); Gander 141.3 (Sd--10614), 219.22 (Sd--11518), 222.6 (Sd--11620), 4972 (Sd--20435), 6084 (Sd--21880); H. M. Hall 3857 (Ca--56232); Herter s.n. [Balboa Park, May 18, 1937] (Sd--21049); F. W. Johnson 1347 (N); J. Let s.n. [San Diego, Nov. 9] (W--71924); Offord s.n. [La Jolla, 9.IV.1932] (La); C. R. Orcutt s.n. [Apr. 1889] (Ca--104834); Edw. Palmer 308 (Bc); Peirson 3379 (Po--17780); Purer 6515 (Du--254355); M. F. Spencer 971 (N, Po--47697), 1414 (Po--47191), s.n. [4.7.1915] (Ob--50820), s.n. [8/1/192-] (Ob--50819); S. G. Stokes s.n. [San Diego, June 1895] (Du--9540); Stover s.n. [Point Loma, April 28, 1937] (Sd--17067); Thurber 555 (T), s.n. [San Diego, May 1852] (N); E. Wall s.n. [San Diego, 16/5/31] (Ew); Wiggins 3257 (Du--181184, Du--366052); C. B. Wolf 2100 (Ca--527652, Du--230975, Gg--237849, Rs--1739). MEXICO: Aguascalientes: Rose & Painter 7799 (W--451414). Baja California: T. S. Brandegee s.n. [San Gregorio, Feb. 4, 1889] (Ca--169171), s.n. [Comondu Viejo, Feb. 17, 1889] (Ca--169736), s.n. [Canon Salado, June 1, 1893] (Ca--169127); W. E. Bryant s.n. [1888] (Gg--31400); Carter, Alexander, & Kellogg 2135 (Ca--916143, Du--349167, W--2022810); Gander 7356 (Sd--24864); H. S. Gentry 4448 (Du--264174, Ge); D. A. Johansen 600 (Du--206474); M. E. Jones s.n. [Tia Juana, April 13, 1925] (Po--114316); Lewis & Epling s.n. [Burn, 4/23/40] (Gg--380468); MacDougal 153 (N); Raven, Lewis, & Thompson 12180 (Ca--171726); L. Schoenfeldt 2915 (W--235268), s.n. [Mearns 2915] (N); Schoenfeldt & Mearns 2915 (Du--9557); Wiggins 5508 (Mi). Chihuahua: H. S. Gentry 1542 (Fs, Ge, I); Pringle s.n. [Apr. 11, 1887] (N). Coahuila: Gregg s.n. [valley of Parras, 11/47] (C); Edw. Palmer 191 (Ca--104854, N, W--336191), 1042 (Pa, W--56169, W--1323113). Durango: Correll & Johnston 20159 (Rf); H. S. Gentry 8576 (Mi, N, W--2022223); E. W. Nelson 4577 (W--332594); Edw.

Palmer 153 (Ca--104824, Me, N, W--304241); Patoni & Ochoterena
 7138 (Me); Waterfall 12573 (Gg, Ok), 12648 (Gg, Ok); Waterfall &
 Wallis 13443 (Ok, W--2297159), 13677 (Mi). Federal District:
 Barkley & Rowell 7464 (Au--170049, Mi, N); Bourgeau 360 (Br, S,
 W--56182); L. I. Davis 207 (N); E. Lyonnet 334 (N); Matuda 18822
 (N), 21190 (N), 26173 (Cb); Miranda & Barkley 16007 (Au, N),
 16M946 (Au), 16M988 (Au, N, Si), 16M997 (Au, N, Si), 16M998 (Au,
 N, Si); Miranda, Barkley, & Rowell 7467 (Au--170144, Mi, N);
 Pringle 7141 (Me, Vt); Rutten & Rutten-Pekelharing 735 (Ut--
 59226a). Guanajuato: Hartweg 175 (Lu--isotype, N--isotype); Hernández Xolocotzi, Rupert, & Guevara I. 2392 (N); Spivey 175 (Ca--
 916747); Waterfall & Wallis 13905 (Ok), 13921 (Ok). Hidalgo: F.
 A. Barkley 17M147 (Au--122307, Au--170082, N); L. I. Davis 208
 (N), 220 (N), 230 (N); M. T. Edwards 889 (Au, Du--275502, Tu--
 34404); Fearing & Thompson 60 (Au); G. L. Fisher 46172 (W--
 1889832); Galeotti 778, in part [Moran] (Br, F--photo, N--photo,
 Si--photo, Z--photo); Gold & Eheberle 21766 (N); H. E. Moore
 2810 (N); Moore & Wood 4134, in part (Ba), 4196 (Ba); Rose,
 Painter, & Rose 8753 (N, W--452241); F. Salazar s.n. [Nopala,
 Aug. 1, 1913] (W--1013228); Schmooberger 7983 (Mi). Jalisco:
 Bárcena 224 (Me); Barkley, Paxson, & Rowell 7664 (Au--167039, N).
 México: Barkley, Westlund, & Paxson 649 (Au--123259, N), 667
 (Au); E. Lyonnet 334 (W--1034214); MacDaniels 553 (Ba); Matuda
 19524 (N), 21415 (N), 21426 (N), 21872 (N), 21885 (N), 26414
 (Cb), 26829 (Cb), 27176 (Cb), 28975 (Z), 29136 (Cb), 29220 (Cb),
 29395 (Cb), 30913 (Ss); Moldenke & Moldenke 19852 (Es, N);
 Pringle 8534 (Ca--138820, Cm, Me, Me, Mi, N, Po--63878, S, Vt,
 W--396358); Rose, Painter, & Rose 8382 (W--451877); H. H. Rusby
 181 (N); A. J. Sharp 44326 (N); Urbina s.n. [Junio de 1882] (Me);
 Waterfall & Wallis 14053 (Ok). Michoacán: Arsène 2798 (Br), s.
 n. [Rincón, 15/7/1909] (N, W--464303), s.n. [Rincón, 25/7/1909]
 (W--464302); Hinton 11991 (It, Mi, N, Rf); Schery 116 (Mi, W--
 1822728), 142, in part (Mi), 143 (Mi). Morelos: Moldenke & Mol-
 denke 19854 (N); Pringle 9529, in part (W--462053). Nuevo León:
 L. I. Davis s.n. [Chipinque, March 8, 1946] (Au--171989); Heard,
 Webster, & Barkley 14511 (Au); C. H. Mueller 2010 (Mi); Mueller &
 Mueller 157 (Me); Edw. Palmer 1041 (Pa); M. Taylor 49 (N); S. S.
 White 1542 (Mi, Oa). Oaxaca: C. Conzatti 4207 (Me, W--1082270);
 E. W. Nelson 1943 (W--250225); Pringle 5715 (Me, Vt). Puebla:
 Kenoyer s.n. [Popocatepetl, 7-2-38] (Fs); Smith, Peterson, & Tejeda
 3907 (W--2397925). Querétaro: Agniel s.n. [Arsène 10242] (W--
 1001585); Arsène 9998 (W--1003638); Basile 99 (W--1268616). San
 Luis Potosí: Edw. Palmer 141, in part (Cm, Me, N, W--397685);
 Parry & Palmer 717 (Io, Pa); Urbina s.n. [Junio de 1892] (Me).

Sinaloa: H. S. Gentry 7027 (Ak—21738, Mi); J. Gonzalez Ortega 743 (Me), 4215 (W—1083502); Edw. Palmer 268 (W—315567); Powell & Edmondson 914 (Au—193267); J. N. Rose 1763 (W—300634); Rose, Standley, & Russell 13422 (N, W—636247), 13447 (N, W—636270). Sonora: T. S. Brandegee s.n. [Hermosillo, May 14, 1892] (Ca—104869); H. S. Gentry 219 (Du—263856, Fs, Mi), 1341 (Ak—19906, Ca—646322, Fs, Ge, I), 1493 (Fs, Ge, I, S, W—1689676), 7972 (N, W—1978766); D. D. Keck 4228 (Du—263793); Maltby 204 (N, W—314949); K. F. Parker 8204 (N, W—2130585); E. A. Phillips 329 (Mi); Rose, Standley, & Rose 12934 (N, W—635754); Rose, Standley, & Russell 12451 (N, W—635258), 13130 (N, W—635948); Shreve 6188 (Cm, Fs); Studhalter 1399 (W—1685700), 1487 (W—1685740), 1537 (W—1685757); S. S. White 654 (Mi), 2938 (Mi), 3790 (Mi), 4104 (Mi, N, W—2132318); Wiggins 6053 (Du—253440), 6458 (Ca—590444, Du—253342, Gg—263811, Mi, Po—253434, W—1739925). Tamaulipas: H. H. Bartlett 10021 (Mi, W—1491366); W. H. Lewis 5385 (Nb). Vera Cruz: Medellin 99 (Me); C. T. Mohr s.n. [Huatusca, 1857] (W—771859); H. E. Seaton 7 (W—56171). State undetermined: M. Halsted s.n. (T); Ruiz & Pavon s.n. (Bm); Wolfelin s.n. [1845] (M). GUATEMALA: Huehuetenango: Steyermark 51655 (W—1949994). SWITZERLAND: Probst s.n. [17.8.36] (Pb). CULTIVATED: Spain: Herb. Hort. Matrit. 58 (Q). LOCALITY OF COLLECTION UNDETERMINED: Collector undesignated 48 (Q); C. T. Mohr 651 (W—771860).

xVERBENA MERETRIX Moldenke, Phytologia 5: 133. 1955.

Synonymy: Verbena hispida x officinalis Dermen, Cytologia 7: 170. 1936. Verbena hispida Ruiz & Pav. x V. officinalis L. ex Moldenke, Résumé 366, in syn. 1959. Verbena officinalis L. ex Verbena hispida Ruiz & Pav. ex Moldenke, Résumé 371, in syn. 1959.

Bibliography: Dermen, Cytologia 7: 170. 1936; Moldenke, Phytologia 3: 467 (1951) and 5: 133. 1955; Moldenke, Biol. Abstr. 30: 1093. 1956; Moldenke, Am. Midl. Nat. 59: 354—355. 1958; Moldenke, Résumé 224, 366, 371, & 472. 1959; Moldenke, Phytologia 8: 121 (1961) and 9: 296. 1963.

This is an artificially produced hybrid between V. hispida Ruiz & Pav. and V. officinalis L., produced and described by Dermen from cultivated material in Massachusetts in 1936. The two parental species grow together in Cochabamba, Bolivia, and the hybrid may be expected there. They both grow also in Chile, but V. officinalis (a European species naturalized in Chile) is known thus far from only one province in which V. hispida also occurs. Both species, however, are weedy in character and spread rapidly. It is probably only a matter of time before they both grow widely in association with each other in that country. The hybrid probably has no horticultural merit other than serving as a curiosity in botanical or experimental gardens.

VERBENA MICROPHYLLA H.B.K., Nov. Gen. & Sp. Pl. 2: 272, pl. 133.
1818 [not *V. microphylla* R. A. Phil., 1857].

Synonymy: *Verbena microphylla* Mart. in Mart. & Spix, Reise Bras. 2: 792. 1823. *Verbena microphylla* Humb. ex Spreng. in L., Syst. Veg., ed. 16, 2: 749. 1825. *Verbena microphylla* Humb. & Bonpl. ex Steud., Nom. Bot., ed. 2, 2: 750. 1841. *Verbena microphylla* Humb. & Kunth ex Benth., Pl. Hartw. 245. 1846. *Verbena microphylla* Kunth apud Schau. in A. DC., Prodr. 11: 551. 1847. *Lantana microphylla* Mart. apud Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 29, sphalm. 1894. *Glandularia microphylla* (H.B.K.) Cabrera, Revist. Invest. Agric. 11: 332. 1957. *Verbena laciniata* f. *purpurea* Herter ex Moldenke, Résumé Suppl. 3: 39, in syn. 1962.

Bibliography: H.B.K., Nov. Gen. & Sp. Pl. 2: 272, pl. 133. 1818; Mart. & Spix, Reise Bras. 2: 792. 1823; Spreng. in L., Syst. Veg., ed. 16, 2: 749. 1825; Hook., Bot. Misc. 1: 170—171. 1829; Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 603. 1843; Walp., Repert. Bot. Syst. 4: 24. 1845; Benth., Pl. Hartw. 245. 1846; Schau. in A. DC., Prodr. 11: 551 & 552. 1847; R. A. Phil., Linnaea 29: 21. 1857; Wedd., Chloris Andina [Castelnau Exped. Bot.] 2: 156. 1860; Wedd., Chlor. And. 2: 156—157. 1861; Griseb., Abhand. Kaiser. Gesell. Wissen. Götting. 24: [Symb. Fl. Argent.] 276. 1879; F. Phil., Cat. Pl. Vasc. Chil. 221. 1881; Lillo, Fl. Tucumán 94. 1888; H. H. Rusby, Mem. Torrey Bot. Club 4: 244. 1895; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 29 (1894) and 2: 1179. 1895; Kuntze, Rev. Gen. Pl. 3 (2): 256. 1898; R. E. Fries, Nov. Act. Soc. Sci. Upsal., ser. 4, 1 (1): 110. 1905; Hayek in Engl., Bot. Jahrb. 42: 164. 1908; Herzog, Bolivia 3: 43. 1916; Sanzin, Anal. Soc. Cient. Argent. 88: 98, 129, & 134. 1919; Stapf, Ind. Lond. 6: 430. 1931; R. Espinosa, Ökol. Stud. Kordillerenpfl. 37 & 38. 1932; Moldenke, Prelim. Alph. List Invalid Names 47. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 34, 35, 40, 44, & 101. 1942; Moldenke, Alph. List Invalid Names 48. 1942; Raimondi, Bol. Mus. Hist. Nat. Jav. Prado 7: 242. 1943; Moldenke, Holmbergia 4: 152. 1945; Moldenke, Bot. Gaz. 106: 162. 1945; Schnack & Covas, Darwiniana 7: 71, 72, & 74, pl. III. 1945; Moldenke, Alph. List Cit. 1: 10, 77, & 266. 1946; Moldenke, Phytologia 2: 335. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 25. 1947; Moldenke, Castanea 13: 116. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 44. 1948; Moldenke, Alph. List Cit. 2: 375, 378, 379, 536, & 599 (1948), 3: 660, 663, 705, 735, 804, 807, 812, 893, 901, 909, 931, 951, 952, 956, 968, & 974 (1949), and 4: 1073, 1127, 1203, 1248, & 1293. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 70, 73, 98, 106, & 198. 1949; Moldenke, Phytologia 3: 286, 289, & 290 (1950) and 5: 96. 1954; Moldenke, Mem. N. Y. Bot. Gard. 9: 177. 1955; Moldenke, Inform. Mold. Set 51 Spec. 4. 1956; Soukup, Biota 1: 181. 1956; Cabrera, Revist. Invest. Agric. 11: 332. 1957; Moldenke, Résumé 81, 85, 115, 119, 122, 127, 296, 306, 364, 370, & 472. 1959; Moldenke, Phytologia 8: 123. 1961; Moldenke, Résumé Suppl. 3: 13—15, 39, & 40 (1962), 4: 17 (1962),

and 6: 6. 1963; Moldenke, Phytologia 8: 472 (1963) and 9: 70, 128, & 397. 1963.

Illustrations: H.B.K., Nov. Gen. & Sp. Pl. 2: pl. 133. 1818; Sanzin, Anal. Soc. Cient. Argent. 88: 129. 1919; Schnack & Covas, Darwiniana 7: pl. III. 1945.

Dwarf prostrate perennial herb, often suffruticose at the base; stems prostrate, spreading, trailing or creeping, rooting at the nodes, forming low mats, 5–10 cm. tall, sometimes to 6.4 m. in diameter, much branched, strigose-hispidulous, with vigorous shoots sometimes 1 m. long; branches prostrate; branchlets pubescent-hirtous; leaves decussate-opposite, small, pale-green, 6–10 mm. long, to 8 mm. wide, deeply cut or tripartite, cuneate into a subpetiolate base, hairy, the segments obovate-oblong, obtuse at the apex, revolute along the margins, entire or the middle one trifid and the lateral ones bifid; spikes terminal and lateral, short, subsessile, capitate, many-flowered; bractlets lanceolate, half as long as the calyx; flowers very fragrant, with a delicate perfume; calyx about 6 mm. long, very hairy, the 5 teeth short, ovate, acute at the apex; corolla varying from blue, purple-blue, pale-blue, clear-blue, "blue and lavender", or "whitish-blue" to pale bluish-lilac, lavender, pale-lavender, lilac, pale-lilac, "lilac-white", violet, red-violet, violet-purple, purple, Parma violet-mauve, or very pale-mauve, or even pale carmine-pink or rose-pink, occasionally white or turning white in drying, sometimes described as "white to purple", glabrous, its tube scarcely twice as long as the calyx, the limb medium-large, about 6 mm. wide, pilose in the throat, the lobes e-marginate; anther-appendages horn-shaped, equaling the mouth of the corolla-tube, becoming blackish; fruit half as long as the calyx; cocci lightly tuberculate on the back.

The type of this interesting high Andean species was collected by Friedrich Heinrich Alexander von Humboldt and Aimé Jacques Alexandre Bonpland "in frigidis Andium Quitensis alt. 1482 hex.", Ecuador, and was deposited in the Kunth Herbarium at Berlin. The original publication date is often given as "1817", but according to the late Dr. John H. Barnhart is actually 1818. The type of V. laciniata f. purpurea was collected by Wilhelm Gustav Herter (no. 1530) in Uruguay.

It is not at all certain to me that the Uruguayan specimens cited below are actually conspecific with the remainder of the material cited here. One would hardly expect such a high Andean species as this to be found also in Uruguay. More study of the material is required to settle this point. It should also be noted that the V. microphylla or R. A. Philippi is Junellia minutifolia (R. A. Phil.) Moldenke. Whether the V. microphylla of Martius is correctly placed here or not is also doubtful. The V. glandularia Jørgensen recorded by me in my 1959 publication as a synonym of V. microphylla is actually a synonym of V. laciniata (L.) Briq. It is possible that V. nivea Moldenke and its f. rosea Moldenke are not specifically distinct from V. microphylla.

Walpers (1845) places V. microphylla in his Section Verbenaca, Subsection Inermes, Group Foliosae, Subgroup Micranthae, and Secondary Subgroup Schizophyllae with 9 other species. It has been found by collectors in gravel, rocky clay soil, rocky sandy soil, and dry soil in general, in stony habitats, on sandy hills, high or dry hillsides and pampas, in fields and dry open sandy campos, on puna and dry sandy open plains, in dry meadows and volcanic soil, in dry or sandy places, dry disturbed roadsides in large open grassy páramos, and in moist sheltered spots, at altitudes of 2135 to 4660 meters, blooming from October to August, fruiting in February, April, May, and October. The only common name recorded for it is "altamera".

Budin 6511 and 7492 are described as having white corollas and may be worthy of nomenclatural designation, but Mrs. R. S. Shepard says of her no. 12 collection "flowers white to purple" and Cárdenas affirms that the flowers are lilac, but "turning white in drying" -- his plant has almost the exact habit and appearance of V. nivea Moldenke. Fosberg & Giler found V. microphylla "on dry overgrazed gentle slope at foot of hill", Vargas "in clay and rocky places", and Brook "in bleak and almost desert area partly due to saline and mineral deposits, among cacti and a few small plants". West calls it a "perennial herb, prostrate rosettes to 30 cm. in diameter, on level open puna among short grasses", while Sandeman says that it "forms small mats in full exposure; flowers usually Parma violet mauve, a pale carmine pink form not infrequent; very frequent in a restricted locality." Schulz 6663 bears a notation on its label affirming that the flowers were purple-blue, but that some specimens have white flowers. Steyermark found the species with "stems hanging down clay banks"; Haught found it "abundant on roadside" and Parodi says it is common in cultivated ground at Lake Titicaca.

Herbarium material of this species has been misidentified and distributed under the names V. ciliata Benth., V. diffusa Willd., V. dissecta Willd., V. erinoides Lam., and V. multifida Ruiz & Pav. On the other hand, the Venturi 3180, distributed as V. microphylla, is actually V. dissecta Willd.; Jørgensen 1026 is V. glandulifera Moldenke; Asplund 6862, Hartweg 1351, A. S. Hitchcock 21739, I. Holmgren 967, Kuntze s.n. [Oruro, 14/3/92], Mille 40, Rimbach 175, Rose & Rose 22312, Spruce 5065, and Steyermark 54853 are V. lacinata (L.) Briq.; Jørgensen 1026, in part, is V. tenera Spreng.; McAtee 3349 is V. tenuisecta Briq.; Buchtien 1102 is V. weberbaueri Hayek; and Firmin 366, A. S. Hitchcock 21737, Pachano 144 & 156, Rimbach 176, and Rose & Rose 22400 & 23906 are Hierobotana inflata (H.B.K.) Briq. The Jørgensen 1737 cited by me in my Alph. List Cit. 2: 599 (1948), as V. microphylla is actually V. tenera Spreng.

Schauer (1847) says that V. radicans Gill. & Hook. is similar to V. microphylla in habit, but differs in its larger leaves

which are completely glabrous and more divided, becoming yellowish in drying.

The Linden 150 collection cited below bears a label reading "Mexico", but this is probably an error for Colombia. Haught 3242 has printed labels reading "Los Rios", but was actually collected "due west of Latacunga", which would place it in the province of Leon, as is indicated on the United States National Herbarium specimen which has "Los Rios" crossed out and "Leon" substituted in longhand. This collection was the basis of my record of the species from Los Rios in my Résumé (1959). Raimondi (1943) cites his no. 10516 from Santiago de Huanta, Peru, while Cabrera (1957) cites Keidel s.n., Krapovickas 3148, and Cabrera 7772, 8666, 8981, and 9174.

In all, 112 herbarium specimens have been examined by me.

Citations: COLOMBIA?: Department undetermined: Linden 150 (Br).

ECUADOR: Azuay: Fosberg & Giler 23211 (N, W-2109897); Wiggins 19851 (Du-311615, Ug). Chimborazo: Hartweg 1351 (Br); Schimpff 720 (N). Cotopaxi: Barclay & Juajibioy 8020 (N). Leon: Haught 3242 (N, W-1708006); Hartweg 176 (Br). Tunguragua: W. H. Camp E.2425 (N, W-2056984). Province undetermined: Spruce 5065 (N, S, S). PERU: Ancash: Sandeman 4599 (K). Ayacucho: R. Ferreyra 5507 (N). Cuzco: Cook & Gilbert 549 (W-603752); F. L. Herrera s.n. [Cuzco, July 1923] (W-1190005); Hicken 56 (S); C. Vargas 9827 (Ca-649009). Lima: R. Ferreyra 3531 (N, Ug); Nufiez 2717 (W-2120734). Puno: P. Aguilar s.n. (Ss); Ellenberg 261 (Ut-115392b); R. Ferreyra 2605 (N); Ochoa 2029 (W-2123542); F. W. Pennell 13359 (N, S, W-1340553); Sandeman 3927 (K); Sharpe 92 (K), 139 (K); Mrs. R. S. Shepard 12 (N, W-1197777); Soukup 70 (Ca-770036, N, W-1775348), s.n. [Nov. 24, 1938] (Ew); R. S. Williams 2510 (N). Province undetermined: Steir s.n. [Matucana] (Mi); C. Watkins s.n. [Tuapata, 1916] (W-1059580); Whiteley s.n. [Rio Casnipeuta, 1869] (Bm). BOLIVIA: La Paz: Asplund 50 (S), 2268 (S, Us), 2145 (S, Us), 2115 (S, Us), 2800 (S, Us); M. Bang 161 (C, Pa, W-71984, W-1416740), 161a (C, Pa, W-1323109); Buchtien 433 (N), 758 (W-1134884), s.n. [La Paz, 1912] (La); Mandon 525 (Mi, N, S, T); Parodi 10098 [Herb. Osten 22533] (Ug). Oruro: Asplund 3222 (S, Us); W. M. A. Brooke 5233 (N); Kuntze s.n. [Oruro] (N); Troll 2919 (B). Potosi: Asplund 3001 (S, Us); Cardenas 345 (W-1573325); Fiebrig 2613 [Herb. Osten 15218] (Ug, W-1177998); J. West 6353 (Ca--564990). Province undetermined: Balls 5934 [Villason, S. Bolivia] (K); R. S. Williams 2510 [Juliaca] (W-1134879). URUGUAY: Herter 1530 [Herb. Herter 87430] (Ca-505236); Osten 3522 (Ug). CHILE: Malleco: Ojiva 18 (Ca-664831). ARGENTINA: Buenos Aires: Carette s.n. [Monte Hermoso, Año 1916] (N). Catamarca: Peirano s.n. [Herb. Inst. Miguel Lillo

32844] (N), s.n. [Herb. Inst. Miguel Lillo 32933] (N). Jujuy: Budin 7492 [Herb. Inst. Miguel Lillo 32798] (N, Ug—4937); Claren 11309 (S), 11324 (S), 11468 (S); R. E. Fries 970 (S); T. Meyer s.n. [Quebrada de Salitro, Feb. 23, 1940; Herb. Inst. Miguel Lillo 34401] (N), s.n. [Herb. Inst. Miguel Lillo 34402] (Mv). Los Andes: Budin 6511 [Herb. Inst. Miguel Lillo 32797; Herb. Osten 23006] (Ca—165679, N, Ug, Ug—4936). Mendoza: Sanzin 132 [Herb. Osten 12818] (Ug). Tucumán: Bruch s.n. [Valle de Tafí, 1908] (N); Lillo 4231 [Herb. Osten 8472] (Ug), 5039 [Herb. Inst. Miguel Lillo 31474; Herb. Osten 8470] (N, Ug), 11152 [Herb. Osten 8473] (Ug); Schreiter 8714 [Herb. Inst. Miguel Lillo 32902; Herb. Osten 22994] (N, Ug), s.n. [Cumbre Alta del Chorro, Dec. 1917; Herb. Osten 12195] (Ug), s.n. [Infiernillo, Dec. 1, 1917; Herb. Osten 12197] (Ug); A. G. Schulz 6663 (Z). LOCALITY OF COLLECTION UNDESIGNATED: Herb. A. Gray s.n. (T).

VERBENA MINUTIFLORA Briq. ex Moldenke, Suppl. List Invalid Names 9, in syn. (1941), *Phytologia* 7: 84—85. 1959.

Bibliography: Moldenke, Suppl. List Invalid Names 9. 1941; Moldenke, Alph. List Invalid Names 48. 1942; Moldenke, Lilloa 8: 432. 1942; Moldenke, Résumé 494 & 495. 1959; Moldenke, Résumé Suppl. 1: 7, 23, & 25. 1959; Moldenke, *Phytologia* 7: 84—85. 1959; Angely, Fl. Paran. 16: 79 (1960) and 17: 46. 1961.

Herb or shrub, to 3 m. tall, much branched; stems erect, stiff, very sharply tetragonal, glabrous or practically so, concave between the margins in drying; branches and twigs numerous, stiffly ascending, medium-stoutish, very sharply tetragonal, concave between the angles in drying, glabrous or practically so, brunescent in drying, somewhat contracted at the nodes; nodes annulate; principal internodes 3—8.5 cm. long; leaves decussate-opposite, firmly chartaceous, uniformly green on both surfaces, divaricate or ascending, narrowly elliptic, 1.1—3.3 cm. long, 3—6 mm. wide, acute at the apex, somewhat narrowed to the sessile base, finely strigillose above and on the venation beneath, 3-veined; midrib and the two secondaries very slender, impressed above, slightly prominulous beneath, the secondaries subparallel to the midrib from above the base almost to the apex, not anastomosing; inflorescence terminating the branches and twigs, subpaniculate; individual spikes usually in 3's, sometimes solitary or paired, abbreviated, less than 1.5 cm. long, less than 1 cm. wide, many-flowered, pedunculate; peduncles very slender, slightly gray-strigillose, especially toward the apex, angulate, sulcate in drying; bracts paired under the branches of the inflorescence, resembling the leaves in all respects but smaller; bractlets linear-subulate or lanceolate, one pair subtending the group of 3 spikes and one subtending each flower in the spike, the latter 1.5—2 mm. long, acute at the apex, very minutely and obscurely grayish-strigillose, closely appressed to the calyx; calyx tubular, 2.5—3 mm. long, 1 mm. wide, densely and very

conspicuously white-strigose, the teeth somewhat unequal; corolla hypocrateriform, lilac or rose to violet, its tube very slender, about 4 mm. long, glabrous, its limb about 2 mm. wide, strigillose beneath, glabrous above.

The type of this interesting species was collected by Captain P. King, R. N. (no. 78) at Montevideo, Uruguay, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva. The type specimen was annotated "Verbena minutiflora Briq." by Briquet before his death and was photographed by Macbride as his Type Photograph no. 24693, but a valid description of the plant does not appear to have been published before 1959. The species is related to V. montevidensis Spreng., but is easily distinguished in any series of specimens. It inhabits campos, hedges near streamlets, marshy or wet swampy campos, marshes, swamps, swampy places, and secondary woods on varzea land, at altitudes of 885 to 1550 meters, and has been collected in anthesis in October, December, January, and March, and in fruit in December and January. Herbarium material has been misidentified and distributed under the names V. isabellei Briq., V. litoralis L., and V. montevidensis Spreng. In my 1941 and 1942 publications I regarded V. minutiflora as a synonym of V. isabellei, while in my 1959 work I regarded it as a synonym of V. montevidensis. Rambo states that where V. minutiflora grows the temperature varies from 0° to 25° C., and there are two meters of rainfall per year, with rare snow.

In all, 35 herbarium specimens and 2 mounted photographs have been examined by me.

Citations: BRAZIL: Paraná: Dusén 6802 (S), 8546 (N, S, W-11481771), 9313 (S); Hatschbach 484 (N, N), 7284 (Ca); Jönsson 942a (Ca-501691, N, S, W-11481969); Mattos & Moreira s.n. [5/58; Herb. Inst. Hist. Nat. 5261] (Z). Rio Grande do Sul: Rambo 30979 (N), 34721 (N, N, S), 49374 (N, S), 51616 (W-2102102), 54985 (B). Santa Catarina: J. F. T. Müller s.n. (P); Rambo 51616 (Le, S); Reitz 3260 (N, S, Sm, W-2321355), 3403 (N, W-2111669); Reitz & Klein 7694 (Mm, S), 7864 (Mm); Smith & Reitz 9146 (Ok, W-2251498). URUGUAY: Capt. P. Smith 78 [Macbride photos 24693] (Kr—photo of type, N—photo of type).

xVERBENA MOECHINA Moldenke, Revist. Sudam. Bot. 4: 19, hyponym (1937); Moldenke in Gleason, New Britton & Br. Illustr. Fl. pr. 1, 3: 126, 131, & 132. 1952.

Synonymy: Verbena angustifolio-stricta Engelm., Am. Journ. Sci. 46: 101, hyponym. 1844. Verbena stricto-angustifolia Engelm., Am. Journ. Sci. 46: 101, hyponym. 1844. Verbena angustifolia x stricta Palmer, Ann. Mo. Bot. Gard. 3: 292, hyponym. 1916. Verbena simplex x stricta Palmer, Ann. Mo. Bot. Gard. 22: 629, hyponym. 1935. Verbena angustifolia x stricta Kellogg ex

Moldenke, Revist. Sudam. Bot. 4: 19, in syn. 1937. Verbena angustifolia x stricta Rydb. ex Moldenke, Revist. Sudam. Bot. 4: 19, in syn. 1937. Verbena stricta x angustifolia Eggert (in part) ex Moldenke, Revist. Sudam. Bot. 4: 19, in syn. 1937. Verbena simplex Lehmann. x V. stricta Vent. ex Moldenke, Prelim. Alph. List Invalid Names 48, in syn. 1940. Verbena simplex x stricta Gates, Fl. Kans. 191, nom. nud. 1940. Verbena stricta x angustifolia Blankinship ex Moldenke, Suppl. List Invalid Names 10, in syn. 1941. Verbena angustifolia x stricta Bush ex Moldenke, Alph. List Invalid Names Suppl. 1: 22, in syn. 1947. Verbena stricta x hastata Gates (in part) ex Moldenke, Alph. List Invalid Names Suppl. 1: 27, in syn. 1947. Verbena stricta x angustifolia Gates ex Moldenke, Alph. List Invalid Names Suppl. 1: 27, in syn. 1947. Veronica angustifolia Michx. ex Moldenke, Am. Midl. Nat. 59: 355, in syn. 1958. Verbena spicata Pammel ex Moldenke, Am. Midl. Nat. 59: 355, in syn. 1958. Verbena stricta var. angustifolia Martens ex Moldenke, Am. Midl. Nat. 59: 355, in textu. 1958. Verbena hastata x bracteosa Pammel ex Moldenke, Am. Midl. Nat. 59: 355, in syn. textu (1958), Résumé 365, in syn. 1959. Verbena simplex x stricta Hitchc. ex Moldenke, Am. Midl. Nat. 59: 355, in syn. textu (1958), Résumé 374, in syn. 1959. Verbena stricta x angustifolia Pammel ex Moldenke, Am. Midl. Nat. 59: 355. in syn. textu (1958), Résumé 375, in syn. 1959. Verbena stricta x angustifolia Popenoe ex Moldenke, Am. Midl. Nat. 59: 355, in syn. textu (1958), Résumé 375, in syn. 1959. Verbena stricta x urticaefolia Letterman ex Moldenke, Am. Midl. Nat. 59: 355, in syn. textu (1958), Résumé 375, in syn. 1959. Verbena stricta x urticaefolia Pammel ex Moldenke, Am. Midl. Nat. 59, 355, in syn. textu (1958), Résumé 375, in syn. 1959. Verbena angustifolia x stricta Eggert ex Moldenke, Résumé 357, in syn. 1959.

Bibliography: Engelm., Am. Journ. Sci. 46: 101. 1844; E. J. Palmer, Ann. Mo. Bot. Gard. 3: 292. 1916; Kanda, Bot. Gaz. 69: 54—71, pl. 6, fig. 2. 1920; E. J. Palmer, Ann. Mo. Bot. Gard. 22: 629. 1935; Moldenke, Revist. Sudam. Bot. 4: 19. 1937; Moldenke, Prelim. Alph. List Invalid Names 44 & 48. 1940; C. C. Deam, Fl. Ind. 797 & 1232. 1940; Moldenke, Suppl. List Invalid Names 10. 1941; Moldenke, Alph. List Invalid Names 45 & 50. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 6, 7, 9, 10, & 101. 1942; Moldenke, Bot. Gaz. 106: 160. 1945; Moldenke, Castanea 10: 38 & 39. 1945; Moldenke, Phytologia 2: 74 & 115. 1945; Moldenke, Alph. List Cit. 1: 28, 45, 80, 81, 143, 148, 149, 159, 181, 193, 262, & 267. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 242. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 22 & 27. 1947; Moldenke, Castanea 13: 112. 1948; Moldenke, Phytologia 2: 478. 1948; Moldenke, Alph. List Cit. 2: 354, 390, 391, 394, 395, 397, 405, 407, 438, 466, 481, 547, & 606 (1948), 3: 657, 720, 783, 790—793, 826, 828, 869, 887, & 973 (1949), and 4: 1137, 1255, & 1261. 1949; Moldenke, Known Geogr. Distrib. Verbenac.,

[ed. 2], 12-14, 16-18, & 198. 1949; Moldenke, Phytologia 3: 131 (1949), 3: 284 (1950), 3: 467 (1951), and 4: 67. 1952; Moldenke in Gleason, New Britton & Br. Illustr. Fl., pr. 1, 3: 126, 131, & 132. 1952; Moldenke, Phytologia 4: 185 & 186. 1933; R. F. Thorne, Proc. Iowa Acad. Sci. 62: 182. 1955; Moldenke, Am. Midl. Nat. 59: 355-356. 1958; Moldenke in Gleason, New Britton & Br., Illustr. Fl., pr. 2, 3: 126, 131, & 132. 1958; Moldenke, Résumé 15-18, 21, 22, 26, 224, 357, 365, 374, 375, 379, & 472. 1959; Moldenke, Résumé Suppl. 2: 3. 1960; Moldenke, Phytologia 8: 121 & 146 (1961) and 8: 405. 1962; Moldenke, Résumé Suppl. 3: 4 & 5 (1962), 4: 14 & 18 (1962), 6: 2 (1963), and 7: 2 & 10. 1963; Gleason & Cronquist, Man. Vasc. Pl. 580. 1963; G. N. Jones, Fl. Ill., ed. 3, [Am. Midl. Nat. Monog. 7:] 213. 1963; Moldenke, Phytologia 9: 147, 220, 356, & 359. 1963.

Illustrations: Kanda, Bot. Gaz. 69: pl. 6, fig. 2. 1920; Moldenke in Gleason, New Britton & Br. Illustr. Fl., pr. 1, 3: 132 (1952) and pr. 2, 3: 132. 1958.

This is a natural hybrid (also produced artificially by Kanda) between V. simplex Lehm. and V. stricta Vent. It occurs abundantly where the ranges of the two parental species overlap in the central portions of the United States. It usually resembles V. simplex in habit, but has broader leaves, which are often elliptic or elliptic-ovate, more or less densely short-pubescent or velutinous beneath, the stems and branches usually densely pubescent, and the spikes poorly and irregularly fruited. From V. stricta it differs in its more slender and poorly fruited spikes, smaller flowers, and narrower leaves.

The binomial name was proposed by me originally in 1937, based on V. angustifolio-stricta of Engelmann (1844), which, however, was published by him without description or reference to a specific collection. I am therefore designating as logotype the specimen collected by Charles Clemon Deam (no. 20357) one mile west of Palmyra, Harrison County, Indiana, on June 22, 1916, and deposited in the Britton Herbarium at the New York Botanical Garden. Deam reports that the plant was "Plentiful along roadside....very variable in width and pubescence of leaves, and I suspect some are hybrids with V. stricta Vent., varies also greatly according to quality of soil."

Engelmann's V. stricto-angustifolia was apparently based on his unnumbered collection from Saint Louis, Missouri, gathered in July, 1842, and deposited in the Torrey Herbarium at the New York Botanical Garden. V. angustifolia x stricta Eggert is based on Eggert's unnumbered collection of July 4, 1896, from Pacific, Franklin County, Missouri, deposited in the herbarium of Iowa State College at Ames. V. angustifolia x stricta Bush is based on Bush 15697, collected on barrens in Stone County, Missouri, and deposited in the herbarium of Kansas State College at Manhattan; V. angustifolia x stricta Rydb. is based on Rydberg & Imler 434, from roadsides in Montgomery County, Kansas, also deposited in the Kansas State College herbarium; V. hastata x

bracteosa Pammel is based on Pammel s.n. from Steam Boat Rock, Hardin County, Iowa, collected in September, 1912, and deposited at Iowa State College, Ames; V. stricta x angustifolia Blankinship is based on Blankinship s.n., collected in Greene County, Missouri, on July 17, 1919, and deposited at Pomona College, Claremont, California; V. stricta x angustifolia Popenoe is based on E. A. Popenoe s.n. from Topeka, Shawnee County, Kansas, collected on July 7, 1879, and deposited at Kansas State College; both V. stricta x angustifolia Pammel and V. stricta x urticaefolia Pammel are based on Pammel s.n. from Oxford Junction, Jones County, Iowa, collected on July 25, 1919, and deposited at Iowa State College.

Verbena simplex x stricta Hitchc. is based on A. S. Hitchcock s.n. from Montgomery County, Kansas, collected in August, 1896, and deposited at Kansas State College; V. stricta x urticaefolia Letterman is based on Letterman s.n. from Allenton, Saint Louis County, Missouri, collected on June 28, 1911, and deposited at Iowa State College; V. stricta var. angustifolia is based on M. Martens s.n.., collected at Saint Louis, Missouri, and deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels; Veronica angustifolia Michx. is based on H. N. Andrews, Jr., s.n., collected at Herculaneum, Jefferson County, Missouri, on May 30, 1936, and deposited at the University of Massachusetts, Amherst; and V. spicata Pammel is based on L. H. Pammel s.n., collected on June 25, 1888, at Washington, Franklin County, Missouri, deposited at Iowa State College. The type of V. angustifolia x stricta Palmer is E. J. Palmer 2932 from Jasper County, Missouri, deposited at the Missouri Botanical Garden in St. Louis. V. stricta x angustifolia Eggert is actually in part this hybrid and in part xV. engelmannii Moldenke, while V. stricta x hastata Gates is in part this, in part xV. rydbergii Moldenke, and in part V. stricta Vent.

Engelmann (1844) comments as follows: "Hybrids of V. angustifolia with any but V. stricta, and of V. bracteosa with any but V. urticaefolia, or of V. aubletia, the only remaining species in this region, I have not yet found." The Bush s.n. [Oct. 9, 1936] collection, cited below, was annotated by Miss Perry as non-typical V. simplex Lehm.

Letterman s.n. [Allenton, June 1884 & June 28, 1911] have very large leaves resembling those of V. hastata L., but much firmer in texture, with the upper ones narrow like those seen in V. simplex. L. H. Pammel s.n. [Sandusky, June & July 1912] is narrow-leaved and much like true V. simplex in appearance, but the same form is found with the broad-leaved hybrid by genetic segregation. His s.n. [Oxford Junction, July 25, 1919] consists of two branches of the broad-leaved form and one dense branch of the narrow-leaved

form exactly similar to the Sandusky specimen. He apparently proposed two different hybrid designations for these parts of the same collection (see above). Somes 3301 is a mixture of xV. moechina and V. simplex.

E. J. Palmer records the hybrid from Jasper County, Missouri, but I have not as yet seen any substantiating specimens from that county.

Collectors have found xV. moechina on high ground along roadsides, open dry ground, sandy prairies, lime uplands, rocky or clay ridges, bluffs, and sand ridges, in rather sandy soil, pastures, overgrazed prairie pastures, prairie pastures with limestone rock surfacing, creek bottoms, and barrens, on sandy hills, along riversides, and in the vicinity of stockyards; also in upland sandy areas, open woods, rolling open pastured hillsides, and along roadsides in general, often closely associated with V. simplex and/or V. stricta. Fell actually says that it is "common in pastures" in Illinois. It has been collected an anthesis and fruit from May through September, at altitudes of 360 to 900 feet. Herbarium material has been misidentified and distributed under the names V. angustifolia Michx., xV. blanchardi Moldenke, V. hastata L., xV. rydbergii Moldenke, V. simplex Lehm., and V. stricta Vent. Collectors record the common names "hoary vervain" and "la sacrée verveine".

L. H. Pammel s.n. [Cedar Falls, Sept. 28, 1920], identified as V. angustifolia, bears a notation by the collector "perhaps a hybrid with stricta", while on his s.n. [Ames, 9-8-94] he says categorically "hybrid between stricta and bracteosa". C. R. Ball s.n. [June 30, 1898] was identified as V. angustifolia with the notation "hybrid possibly with stricta". The label on F. E. McDonald s.n. [Peoria, Jul. 1904] says "evidently a hybrid". Shimek s.n. [Oct. 14, 1919] from an upland sandy area in Muscatine County, Iowa, was identified as V. stricta x angustifolia, presumably by the collector, and is in part xV. moechina and in part typical V. stricta, while Ruth s.n., collected at Knoxville, Knox County, Tennessee, in July, 1897, was determined by the collector as V. angustifolia x stricta and is indeed this hybrid. Schopf comments that of this taxon there were "scattered plants over rolling pastured hillside". Thorne (1955) cites two specimens from Johnson County, Iowa: "A presumable hybrid between this species [V. stricta] and V. simplex Lehm. was collected at Dwyer's Lake, Cedar Twp., R. P. Adams 1929, and in sandy prairie south of Iowa City, Shimek 1917". The R. Bebb 4376, distributed as V. stricta x simplex, is typical V. stricta Vent., while Demaree 30963 is apparently a mixture of this hybrid and V. stricta.

In all, 108 herbarium specimens, including the types of almost all the names involved, have been examined by me.

Citations: OHIO: Erie Co.: L. H. Pammel s.n. [Sandusky, June &

July 1912] (Io--54400). ILLINOIS: Adams Co.: Evers 1444 (Ur). Peoria Co.: F. E. McDonald s.n. [Peoria, Jul. 1904] (Ur). Pope Co.: Schopf 6 (Il--16010). Saint Clair Co.: Eggert s.n. [Ill. opposite St. Louis, Aug. 12, 1875; Herb. Geete 5710] (Go, W--1323130). Stephenson Co.: Eggert s.n. [stockyards; August 12, 1875] (I), s.n. [bluffs, 12 Aug. 1875] (I). Winnebago Co.: E. W. Fell 51307 (Il--38904), 51330 (Il--38610), 51331 (Il--38611). INDIANA: Daviess Co.: C. C. Deam 25586 (In). Harrison Co.: C. C. Deam 20357 (N-type, Pu-isotype, W--769168-isotype), 20357a (Dm). Marion Co.: C. C. Deam 6953 (Dm). Orange Co.: C. C. Deam 26226 (Dm). Washington Co.: C. C. Deam 20603 (Dm). IOWA: Black Hawk Co.: Burk 594 (Ur); L. H. Pammel s.n. [Cedar Falls, Sept. 28, 1920] (Io--98936); Pammel, Fisk, & Gilbert 272 (N). Cerro Gordo Co.: A. Hayden 1, in part (N, N, N, N, N, N, N, N, N), 3 (N, N, N, N, N, N, N, N, N, N). Hardin Co.: L. H. Pammel s.n. [Steam Boat Rock, 9-1912] (Io--51974). Jones Co.: L. H. Pammel s.n. [Oxford Junction, Jul. 25, 1919] (Io--97271, Io--97273). Muscatine Co.: Shimek s.n. [Oct. 14, 1919] (N). O'Brien Co.: Winge s.n. [Calumet, Maj 1911] (Cp). Story Co.: C. R. Ball s.n. [June 30, 1898] (Io--15309); L. H. Pammel s.n. [Ames, 9-8-94] (Io--15324). County undetermined: Somes 3301, in part [Blackstrap] (W--672170). KENTUCKY: Warren Co.: S. F. Price s.n. [Bowling Green] (N). TENNESSEE: Knox Co.: Ruth s.n. [Knoxville, July 1895] (Dt). KANSAS: Greenwood Co.: W. H. Horr s.n. [July 28, 1930] (Lw). Leavenworth Co.: Jahns s.n. [June 27, 1929] (Lw). Miami Co.: Oyster s.n. [Aug. 1885; Herb. Prager 18624] (Gg--31413). Montgomery Co.: A. S. Hitchcock s.n. [Montgomery Co., Aug. 1896] (Ka); Rydberg & Imler 434 (Ka--74585, Lw, N). Shawnee Co.: A. S. Hitchcock s.n. [Shawnee Co., July 1896] (Ka); E. A. Popenoe s.n. [Topeka, July 7, 1879] (Ka, W--1119628). Woodson Co.: E. W. Lathrop 369 (W--2235044), 488 (W--2235073). MISSOURI: Barry Co.: Bush 15613 (Ka--88950). Franklin Co.: Eggert s.n. [Pacific, 4 July 1896] (Au, Cm, Io--54422, Mn--6895, W--754958); L. H. Pammel s.n. [Washington, 6/25/88] (Io--22913). Greene Co.: Blankinship s.n. [July 17, 1919] (Po--63848). Jackson Co.: C. A. Ripley s.n. [July 1898] (Ob--50749). Jefferson Co.: H. N. Andrews Jr. s.n. [Herculaneum, 5/30/36] (Ms). Phelps Co.: Kellogg s.n. [Jerome, June 20, 1912] (N), s.n. [Jerome, July 10, '12] (W--1325386). Pike Co.: J. Davis 3379 (Ur). Polk Co.: Steyermark 24049 (Ky). Saint Louis Co.: Letterman s.n. [Allenton, June 1884] (Io--75363), s.n. [Allenton, June 28, 1911] (Au, Io--76362, N, W--986430). Stone Co.: Bush 15697 (Ka--88956), s.n. [Oct. 9, 1936] (Md). Saint Louis: Eggert s.n. [St. Louis, 12 Aug. 1875] (Al, N); Engelmann s.n. [St. Louis, Sept. 1841] (W--71994), s.n. [St. Louis, July 1842] (Pr, T), s.n. [St. Louis] (Br); M. Martens s.n.

[St. Louis] (Br, Br). ARKANSAS: Baxter Co.: Demaree 29320 (N). Boone Co.: Demaree 3023 (We). Fulton Co.: Demaree 26322 (Au--122341, N). Izard Co.: Demaree 22745 (Bm). Lawrence Co.: Rolfs s.n. [8/91] (Io--4489). Newton Co.: Demaree 22244a (N, Z). Pope Co.: G. Merrill 571 (Au--122340). Pulaski Co.: Hasse s.n. [Little Rock, May 30] (N). Randolph Co.: Demaree 30963, in part (Au--122713). OKLAHOMA: Ottawa Co.: G. W. Stevens 2308 (Ok, Ok). CULTIVATED: Belgium: M. Martens s.n. [h. b. l.] (Br). LOCALITY OF COLLECTION UNDESIGNATED: Herb. Bothe s.n. (B, B).

VERBENA MONACENSIS Moldenke, *Phytologia* 2: 148--149. 1946.

Bibliography: Moldenke, *Phytologia* 2: 148--149. 1946; Moldenke, Alph. List Cit. 2: 413. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 164 & 198. 1949; Moldenke in Chittenden, Roy. Hort. Soc. Dict. Gard. 4: 2209 & 2211. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 263. 1953; Moldenke, Résumé 224 & 472. 1959; Moldenke, Résumé Suppl. 3: 29 (1962) and 4: 10. 1962.

Herb; stems apparently prostrate, ascending toward the tips, branched, sharply tetragonal, brownish, lightly and irregularly pilose, less so in age; branches more sharply tetragonal (almost submargined) and more densely appressed-pubescent; nodes annulate; principal internodes 2--7 cm. long; leaves decussate-opposite, often bearing abbreviated and very leafy branches in their axils; petioles to 1 cm. long, usually much shorter, winged and almost indistinguishable from the rachis of the lamina, strigose on both surfaces; leaf-blades uniformly green on both surfaces, chartaceous, deeply trifid, the divisions again incised, the individual lobes mostly obtuse at the apex and elliptic or oblanceolate in outline rather than linear or oblong, strigose on both surfaces, the margins slightly revolute, the midrib and secondaries slender, obscure above, prominulous beneath; inflorescence solitary at the end of each stem and branch, at first condensed, later elongating to 4 cm. or more, densely many-flowered; peduncles slender, 1.5--6.5 cm. long, densely strigose or appressed-pubescent, conspicuously tetragonal like the branches; bractlets lanceolate, about 6 mm. long, 1 mm. wide at the base, densely short-pubescent with subappressed whitish hairs, densely white-ciliate along the margins, long-attenuate at the apex; calyx tubular, 8--9 mm. long (including the teeth), strigillose, 5-costate, its rim shortly 5-toothed, the teeth triangular and usually less than 1 mm. long; corolla large, showy, its tube projecting about 5 mm. beyond the calyx, glabrous outside, its limb about 1 cm. wide, the lobes shallowly bilobulate at the apex; anther-appendages not exserted.

The type of this curious species in a specimen from the Martinus Herbarium deposited now in the herbarium of the Jardin Botanique de l'Etat at Brussels, said to have been collected from cultivated plants in the botanical garden at Munich, Germany, in 1823 [not "1843" as erroneously stated by me previously]. The Blom specimen cited below, cultivated in Sweden, was apparently grown from seed obtained from Rouen, so presumably the species is/was cultivated also in France. It has in the past been misiden-

tified and distributed under the names V. erinoides Lam. and V. tenera Spreng. In all, 3 herbarium specimens, including the type, and 2 mounted photographs have been examined by me.

Citations: CULTIVATED: Germany: Herb. Martius s.n. [h. Monac. 1823] (Br--type, N--isotype, N--photo of type, Z--photo of type). Sweden: Blom s.n. [from Rouen 1929] (Go).

VERBENA MONTEVIDENSIS Spreng. in L., Syst. Veg., ed. 16, 2: 747. 1825.

Synonymy: Verbena isabellei Briq., Ann. Conserv. & Jard. Bot. Genèv. 4: 234. 1900.

Bibliography: Spreng. in L., Syst. Veg., ed. 16, 2: 747. 1825; Steud., Nom. Bot., ed. 2, 2: 750. 1841; D. Dietr., Syn. Pl. 3: 600. 1843; Walp., Repert. Bot. Syst. 4: 20. 1845; Schau. in A. DC., Prodr. 11: 540. 1847; Schau. in Mart., Fl. Bras. 9: 187. 1851; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 1179. 1895; Kuntze, Rev. Gen. Pl. 3 (2): 257. 1898; Briq., Ann. Conserv. & Jard. Bot. Genèv. 4: 234. 1900; K. Schum. in Just, Bot. Jahresber. 28 (1): 497. 1902; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 191. 1904; Briq., Arkiv Bot. 2 (10): 12. 1904; Briq., Ann. Conserv. & Jard. Bot. Genèv. 10: 101 & 102. 1907; Moldenke, Suppl. List Invalid Names 9. 1941; Moldenke, Lilloa 6: 333 (1941) and 8: 432. 1942; Moldenke, Alph. List Invalid Names 48. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39, 41, & 101. 1942; Rosengurtt, Estud. Prad. Nat. Urug. 3: 234 (1943) and 5: 394. 1946; Schnack & Covas, Bol. Soc. Argent. Bot. 1: 284. 1946; Augusto, Fl. Rio Grande do Sul 211 & 233. 1946; Troncoso & Burkart, Darwiniana 7: 214 & 215. 1946; Moldenke, Alph. List Cit. 1: 171 & 264. 1946; Schnack & Covas, Haumania 1: 5, [8], & 10, fig. 2h. 1947; Moldenke, Castanea 13: 117 & 119. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 65. 1948; Moldenke, Alph. List Cit. 2: 484, 577, 598, & 612 (1948), 3: 665, 688, 693, 703, 705, 745, 840, 845, 916, & 923 (1949), and 4: 1249, 1250, & 1257. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 94, 99, 100, & 198. 1949; Moldenke, Phytologia 3: 136 (1949) and 3: 306. 1950; Stellfeld, Trib. Farmac. 19 (10): 166. 1951; Moldenke, Inform. Mold. Set 48 Spec. [4] (1954) and 49 Spec. 3. 1954; Rambo, Sellowia 7: 260. 1956; Angely, Fl. Paran. 7: 13. 1957; Moldenke, Am. Midl. Nat. 59: 334. 1958; Reitz, Sellowia 11: 57 & 134. 1959; Moldenke, Résumé 110, 118, 119, 127, 367, 370, & 472. 1959; Moldenke, Résumé Suppl. 1: 23. 1959; Angely, Fl. Paran. 16: 78 & 79 (1960) and 17: 46. 1961; Moldenke, Résumé Suppl. 3: 6 (1962) and 4: 10. 1962; Moldenke, Phytologia 8: 267, 314, 317, & 382 (1962) and 9: 93. 1963; Moldenke, Résumé Suppl. 6: 7 (1963) and 7: 6. 1963; Moldenke, Phytologia 9: 367 & 380—382. 1963.

Illustrations: Schnack & Covas, Haumania 1: [8], fig. 2h. 1947.

Tall perennial herb, subshrub, or suffrutescent shrub, 0.5—3 m. tall, scaparious, very much branched; branches green, ascending, acutely tetragonal, almost leafless, smooth and glabrous, slender; principal internodes beneath the inflorescence to 17 cm.

long; leaves decussate-opposite; petioles short, 2-3 mm. long; lower leaf-blades rather small, lanceolate, green, membranous, 1 to 3 cm. long and 7 mm. wide, acute at the apex, regularly convex and entire or subentire along the margins, cuneately attenuate into the petiole at the base, glabrous on both surfaces, the venation simply pinnate, subprominent; upper leaves much reduced, the blades lanceolate-linear, 0.5-1.5 cm. long, the uppermost linear or setaceous, sessile; spikes short, 5-15 mm. long, slender-pedunculate, dense-flowered, about 4 mm. wide; bractlets lanceolate-setaceous, about 1.5 mm. long, shorter than the calyx; calyx ovoid-campanulate, 2-2.5 mm. long, 5-costate, short-pubescent with antrorse hairs on the outside, especially on the ribs, its tube 1.5-2 mm. long, the rim shortly 5-dentate, the teeth ovate at the base, short-mucronate at the apex, scarcely 0.5 mm. long; corolla varying from bluish, blue, or blue-violet to pale-violet, violet, pale-lilac [Saccardo 48X], dark-lilac, "white-lilac", purple, clear-purple, rose, or red, ["white to light-violet", according to Osten], about twice as long as the calyx or exceeding it by 2.5 mm., short-puberulent on the outside; stamens and pistil slightly exserted; cocci dark, oblong, about 1.5 mm. long; chromosome number: basic no. = 7, $2n = 21$ (and 42).

The type of this species was collected by Friedrich Sellow at Montevideo, Uruguay, and was deposited in the herbarium of the Botanisches Museum at Berlin, where it was photographed by Macbride as his photograph no. 17432, but is now destroyed. The type of V. isabellei was collected by Arsene Isabelle -- in whose honor it was named -- in Rio Grande do Sul, Brazil, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva.

The species was reduced to synonymy under V. stellaroides Cham. by Schauer (1847, 1851) and by Jackson (1895), but is certainly not at all closely related to that species, as was pointed out by Kuntze on a label on the type sheet. In my 1941 and 1942 publications V. minutiflora Briq. was regarded mistakenly as conspecific with V. isabellei (which I now regard as a synonym of V. montevidensis), but I now regard this as distinct.

Verbena montevidensis inhabits thickets, shrubby fields or campos, marshes and shrubby marshes, fields, open woods, pastures and dry sandy pastures, campos, meadows, parks, grassy plains, bogs, grassy places, dry stony meadows, cutover forest land, low wet places, and waste places in general. Collectors have found it along fences, roadsides, grassy roadsides, and rather wet roadsides, in woods, wet places, marshy ground, and sandy soil, at the edge of woods, along riversides and river banks, under trees at the edge of "monte" or in the interior of "monte", and in wet shrubby campos in a region of 2 meters rainfall and 0° -- 25° temperature variation. Dusén describes it as "ruderal" and Rambo reports it widespread in cultivated ground. Ewan found it in sandy soil of newly planted cane fields and in grassy pasture of bayou margin associated with Emelista tora (L.) Britton & Rose, Ditremexa occidentalis (L.) Britton & Rose, and Vernonia, in full

sun, in Louisiana.

It has been found at altitudes of 200 to 1650 meters, blooming in every month of the year, fruiting from November to March, in June, and September. Legrand states that it flowers from November to February in Uruguay. It is used medicinally in Brazil according to Reitz, and in Argentina according to Montes. Vernacular names reported for it are "anil", "camaradinha", "formosa sem dote", "jurupeba", and "quinanha". Osorio reports it as "rare in pradera" in Uruguay.

Herbarium material has been misidentified and distributed under the names V. alata Cham., V. approximata Briq., V. bonariensis L., "V. cf. caracasana H.B.K.", xV. engelmannii Moldenke, V. intermedia Gill. & Hook., V. litoralis H.B.K., V. litoralis Kunth, V. litoralis L., V. littoralis H.B.K., V. littoralis Kunth, V. littoralis var. brasiliensis Briq., and V. phlogiflora Cham.

On the other hand, the Jönsson 942a, Rambo 51616 & 54985, Reitz 3260 & 3403, and Smith & Reitz 9146, distributed as V. isabellei or V. montevidensis, are actually V. minutiflora Briq., while Smith & Klein 7787 is V. reitzii Moldenke. Malme s.n. has extra large leaves, while Malme 661 exhibits both large and small leaves on the same stem.

Schnack & Covas (1947) determined the basic chromosome number for this species as 7, $2n = 21$, from a specimen cultivated at Capital, Mendoza, originally from Lavallol, Buenos Aires. They comment "En Verbena montevidensis hemos observado 21 cromosomas somáticas en seis individuos distintos y sólo en uno $2n = 42$. Esto parece indicar que esta especie es apomictica, condición que estudiaremos oportunamente." Troncoso & Burkart (1946) say "Verbena montevidensis Sprengel es una especie hasta ahora dudosa, que Schauer..... coloca con interrogante entre los sinónimos de V. stellaroides. Gracias a las notas de O. Kuntze..... y a la fotografía del tipo (Montevideo, fotogr. 17432 de la serie del Museo de Chicago) se llega a la seguridad que no tiene nada que ver con esa especie. Parece que V. montevidensis es una buena especie, vecina de V. littoralis, pero distinta por su estatura menor, los tallos menos escabrosos, las brácteas pequeñas, etc. Es común en el Uruguay y las regiones vecinas de la Argentina." They describe the number of spikes as "infinitas" and say "V. intermedia y V. montevidensis tienen los tallos macizos."

Rambo, in a letter to me dated August 14, 1955, states that in his opinion his no. 38055 is V. litoralis, not V. montevidensis, since it grew along a roadside (typical of that species) and not in a swamp (which he thinks is typical of V. montevidensis). I believe, however, that he momentarily confused V. montevidensis with V. alata when he made this statement, since the latter species is more typical of swamps.

In all, 208 herbarium specimens and 7 mounted photographs, including phototypes of both the names involved, have been examined

by me.

Citations: LOUISIANA: Avoyelles Par.: Ewan 19083 (Tl). Evangeline Par.: Ewan 19367 (Tl). BRAZIL: Minas Gerais: P. Clausen s.n. [Aug.--April 1840] (Br, Br); Regnell I.326 (Ja--14845). Paraná: Beetle 2025 (Ng--6574, W--2143908); Braga & Lange 85 (Gg, W--2369344); Dusén 2490 (Ja--14846, N, S, W--1199436), 7827 (Ca--501690, N, N, S, S, W--1481772), 10856 (N, S, W--1481774), 11169 (S); Imaguire 1847 (N, S); Mattos 4710 (S), s.n. [Herb. Mus. Paran. 4710] (N), s.n. [Herb. Mus. Paran. 4751] (N); Nogiri 4 (Gg); Reiss 56 (N); Stellfeld s.n. [4/944; Herb. Fac. Farm. Odont. 1225] (N), s.n. [Herb. Mus. Paran. 1634] (N). Rio Grande do Sul: Henz 35346 (N); Isabelle s.n. [Macbride photos 24690] (Kr--photo, N--photo); Lindman A.475 (N, N, S); Malme 166 (N, S), 661 (N, S), s.n. [Cruz Alta, 20/1/1902] (S); Moldenke & Moldenke 19681 (Es, Lg, N, Sm); Rambo 9374 (Rb), 38055 (N), 45339 (Au, Go), 46069 (Au, W--2026996), 49723 (Go), 51449 (S, W--2102035), 52083 (S), 55075 (B); Saldanha 6327 (Ja--46579); Schwacke s.n. [Conceição do Uruguai, IV. 1880] (Ja--46581); Schwarzer s.n. [Colonia Sito Angelo, Oct. 1900] (S); Sehnem 3519 (B); J. Vidal s.n. [Boca do Monte, March 1939] (Ja--34943). Santa Catarina: Dusén 17852 (S), 17880 (S); Klein 2133 [Herb. Barb. Rodr. 14209] (N, Sm, W--2321339); F. Müller s.n. [1876] (Ja--31564), s.n. (Ja--46535); Reitz 51358 (S), C.76 (Ja--51358, N, N), H.939 (S); Reitz & Klein 1120 [Herb. Barb. Rodr. 8374] (Cb, N, W--2220170), 2772 (Sm), 3758 (Sm), 3872 [Herb. Reitz 14211] (N, N, Sm), 5528 (W--2252083), 6840 (Mm), 7154 (Mm); Smith & Klein 7504 (Ok, W--2251285), 11797 (Ok, W--2251815); Smith & Reitz 8988 (Ok, W--2251478), 9730 (N, Ok, W--2251595), 10175 (W--2249467), 10303 (W--2249370); Smith, Reitz, & Sufridini 9463 (Ok, W--2251554), 9624 (Ok, W--2251575). PARAGUAY: Grosse & Lindman 3651 (Ja--28230); Hassler 6685 (Cb, N, N--photo, Z--photo), 7064 (N); T. Rojas 448 [Herb. Osten 7904] (Ug); A. G. Schulz 7682 (Cb). URUGUAY: J. Anderson 78 (Bm); Anderson & al. 78 [Herb. Reichenbach f. 131125] (V); Arechavaleta 39 (N, Ug--1133, Ug), 3139 (Ug); H. H. Bartlett 20689 (Mi, W--2320141), 20751 (Mi), 21301 (Au--194909, Mi, W--2320284); Berro 5017 (N), 8148 (N), 8232 (N); Castellanos s.n. [Herb. Inst. Miguel Lillo 15046] (N), s.n. [Herb. Inst. Miguel Lillo 15760] (N); Collector undesignated s.n. [Montevideo, Dec. 1885] (Ug), s.n. (Ug, Ug); Gibert 445 (Ug); Herter 269 [Herb. Herter 81713] (N, N, W--1341849), s.n. [Sierra Aceguá; Herb. Osten 18499b] (Ug); Kuntze s.n. [Montevideo, 7/XII/91] (N); Legrand 254 (Ug), 1992 (Ug), 2009 (Ug), 3809 (Ug), 4019 (Ug), 4488 (Ug); Osorio 265 (Ug--13321), 403 (Ug--13332), 662 (N, Ug--13234, Ug), 1009 (N, Ug, Ug--13212), s.n. [Valle Eden, Feb. 18, 1947] (Ug--13487).